SOUTHERN POWER AND INDUSTRY

OCTOBER, 1956

NINTH ANNUAL BETTER PRODUCTION ISSUE

48 Case Histories

Plant Service Equipment
Piping and Accessories
Power and Steam Supply
Materials Handling
Maintenance Procedures
Production Equipment

Complete Contents on Page 3

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Heat Exchanger Pays Off

OVER $12,000 annual savings in fuel costs at Talon's N. C. plant. Waste heat reclaimed from hot waste dye liquor with **heat reclaimer** and **accumulator tank.**—See Case 2, Page 61.

Low-Maintenance Lighting

BETTER production at Lockheed's Georgia Division with use of **plug-in fluorescent fixtures.** Overhead interferences prohibited use of continuous rows.—See Case 1, Page 60.

Steam Production Economies

FEEDWATER treatment costs have been cut 50% at Olin Mathieson's Kentucky plant. Switch to **non-flammable hydrazine** as an oxygen scavenger has paid off.—See Case 17, Page 74.

Sprinkler Hanging Method

$1,125 was saved at Bigelow's South Carolina Landrum Mills when 2,800 fasteners and couplings for sprinkler system were applied with **powder actuated tools.**—See Case 6, Page 66.

Plus 44 Other Case Histories ➡ ➡

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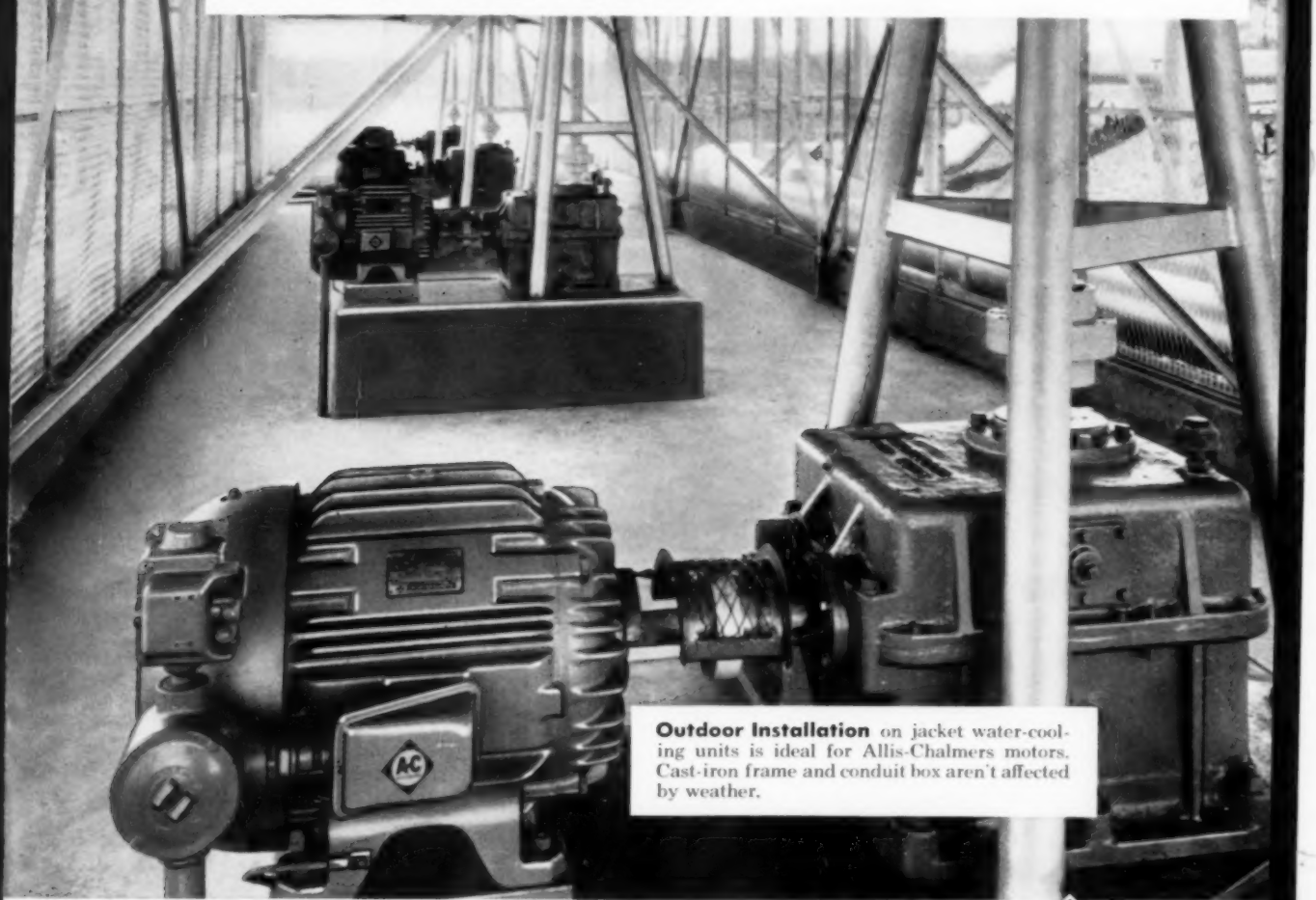

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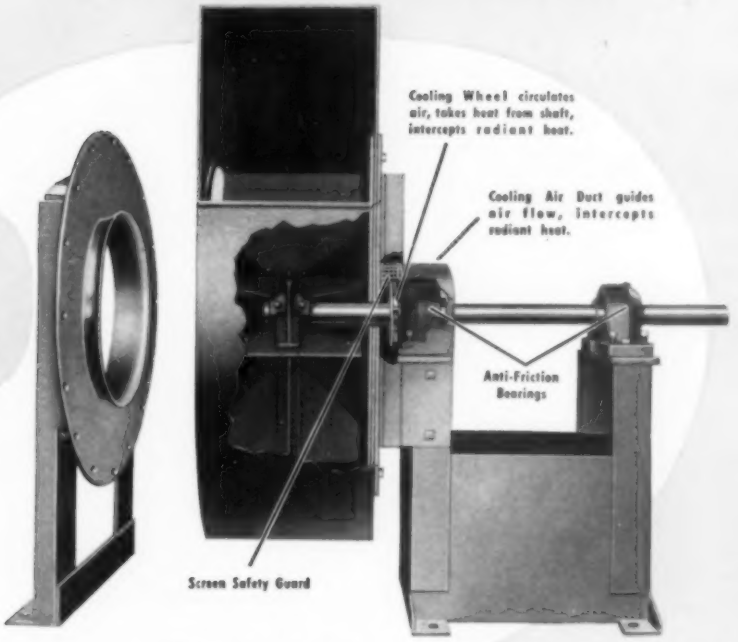
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Cooling Air Duct guides air flow, intercepts radiant heat.
Anti-Friction Bearings
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SOUTHERN POWER AND INDUSTRY

Vol. 74
No. 10

OCTOBER, 1956

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Volume 74 **Number 10**

Facts and Trends

FOR SOUTHERN INDUSTRIAL AND POWER EXECUTIVES

October 1, 1956

◆ STEAM PRODUCTION ECONOMIES have been achieved at Olin Mathieson Chemical Corporation's Brandenburg, Kentucky plant by switching from sulphite to hydrazine as an oxygen scavenger. Treating 4,600,000 lb of feedwater daily, this plant uses 76 lb of hydrazine, or 35.4 gallons of Scav-Ox a year. Same job previously done with sulphite had required handling and storing of 3,650 lb of the solid chemical a year.

Scav-Ox, a new non-flammable form of hydrazine (35% solution of hydrazine in water) has been recently marketed by Olin Mathieson. Development (non-flammable characteristics) makes possible use of the chemical in low pressure heating boilers.
(See Case 17—Page 74)

◆ PLANT LIGHTING—Savings can easily pile up with the selection of a proper system. When designing Tube-Kote's new Louisiana plant, engineers recently switched from a proposed $7,000 lighting system to one that will cost $7,240. The more expensive installation not only will produce better lighting but will save $365 in lamp replacement and $873 in electricity.

Incandescent lighting plan would have used 62, 300 watt incandescent lamps at 120 v. System selected was the Wide-Lite design and color-corrected mercury vapor lamps—26 fixtures at 460 v. The $240 investment will return a saving of more than $6,000 in five years.
(See Case 15—Page 72)

◆ OVER $1,000 WAS SAVED in hanging sprinklers in the new Bigelow Sanford Carpet plant in Landrum, S. C. Installation of studs from which to suspend the sprinkler system was greatly simplified by using the powder-actuated system of fastening. A "Ramset" gun (Olin Mathieson Chemical Corporation) was used to shoot over 2,800 3/8" diameter studs into steel.
(See Case 6—Page 66)

◆ WASTE DISPOSAL CHECK—In Charlotte, N. C., automatic recorders in two specially designed trailers of the city's Water Department rove from plant to plant keeping a watchful eye on industrial wastes being discharged into sewer mains. Equipment (L&N recorders and Hagan flow meters) permits a 24 hour test to be conducted without the need for constant supervision.

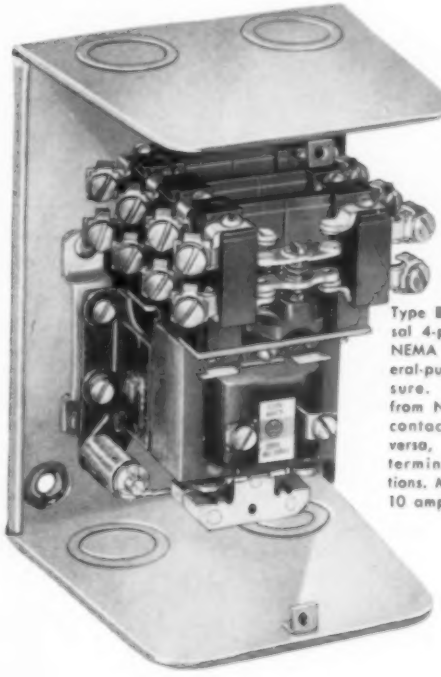
At a glance, engineers can tell whether or not the plant waste is near enough to being harmless. Each plant discharging over 40,000 gallons a day has its effluent checked every 90 days. Regardless of quantities involved, any corrosive mixtures detected at disposal plants are traced to their source and responsible plants notified. The mobile trailers with automatic recorders have eliminated the burdensome and time consuming task of manual sampling and checking methods.
(See Case 19—Page 76)

(Continued on Page 7)

QUALITY RELAYS

for Long, Trouble Free Service

in Critical Control Circuits

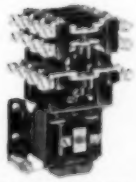


Type BX-44 Universal 4-pole relay in NEMA Type 1 general-purpose enclosure. To change from N.O. to N.C. contacts, or vice versa, just change terminal connections. Max rating—10 amperes.

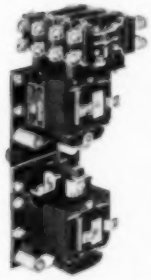
Type C-200 A-C 2-pole relay

Type B-400 normally open 4-pole relay

Type B-800 normally open 8-pole relay



Type BX-840 universal 8-pole relay



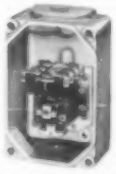
Type BXL-440 universal relay with latch

Type EX-440 D-C universal relay

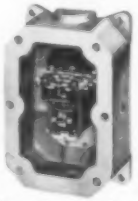
Type BX-220 universal 2-pole relay

Type BM-200 mechanically held relay

Type BA-20 2-pole thermostat relay



Relay in watertight enclosure



Relay in explosion-proof enclosure

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NEW ORLEANS—Robbins & Robbins, 1037 Magazine St., Tel: Canal 5805
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RICHMOND—H. M. Wood & Co., Inc., 2016 Second Ave., Tel: 3-8529
ST. LOUIS—Harold Julien, 904 N. Grand Blvd., Tel: JEfferson 5-1901
SAN ANTONIO—Wilson Elect. Equip. Co., 101 E. Maple St., CApitol 4-2344
SAN DIEGO—James A. Setchell Co., Inc., 301 W. "G" St., Tel: BEImont 3-3981
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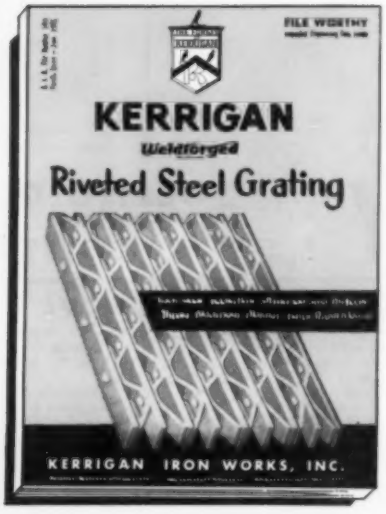

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PLAIN • SERRATED

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Facts and trends *(continued from page 4)*

◆ HEAT RECLAIMER and accumulator tank installation at Talon's Textile Division plant in Stanley, N. C., has saved the company $12,000 in fuel costs. An estimated savings of 2 million cu ft of natural gas, representing a reduction of 33 1/3% in fuel consumption has been noted since the installation of a Patterson-Kelley system of reclaiming waste heat from hot waste dye liquor.

Used to preheat incoming city water within a waste water heat reclaimer, the hot dye liquor transfers its heat to this city water, raising it in temperature as much as 100 F, and all without fuel cost. The preheated fresh water is held in two storage tanks with a combined capacity of 10,000 gallons.

Temperature elevation to near boiling point as required by the dyeing process is accomplished by an instantaneous heater with a minimum steam requirement. Both the instantaneous heater and the waste water heat reclaimer are heat exchangers of the shell-and-tube type.
(See Case 2—Page 61)

◆ RE-STUDY THAT OLD BOILER HOUSE for possible hidden values. Many plant electrical systems are loaded to the limit. But steam as a source of energy, has suffered a decline in many production plants.

In Fort Worth, Texas, Convair Division of General Dynamics, manufactures modern high performance aircraft. One of the new types of materials and manufacturing methods involved the use of "honeycomb bonded" panels or skins—inner and outer aluminum alloy sheets with a fiberglas plastic "honeycomb" bonded between with an adhesive.

To obtain satisfactory bonds, precise control of pressure and temperature are necessary and the rate of heating and cooling must be controlled. Heating methods investigated included circulating hot liquid, electric resistance units and steam. Steam seemed to have many advantages which, together with its availability due to excess boiler capacity, tipped the scales in its favor. Other methods would have added to the already heavy electrical load, while steam demands had decreased so that only two of the plant's four 100,000 lb/hr boilers could carry the load. Tool engineers, aided by plant engineers, then designed special steam heated fixtures.
(See Case 7—Page 67)

◆ LOW-MAINTENANCE LIGHTING—Lockheed Aircraft Corporation recently relighted their small tool repair shop grinding area. Installation of continuous rows of fluorescent fixtures presented a problem because of overhead interferences—dust collector system, air conditioning ducts and a sprinkler system. A congested floor area limited the use of scaffolding.

Problem was solved by the use of plug-in fluorescent fixtures manufactured by Gibson Manufacturing Co. of Atlanta, Ga. Fixture consists of a uni-race channel with fixture receptacles. This aluminum channel is completely wired on the floor and is then lifted into place by men on ladders. The semi-direct industrial fixture is completely self wired including ballast and a two prong plug. Lamps are installed and the complete fixture is then plugged into the channel receptacle.

Lower maintenance costs are evident—fixture can easily be removed to the floor or shop and there is no need to cut out entire light circuits.
(See Case 1—Page 60)

The Booming South and Southwest . . .

New Plants — Expansions

- √ Manufacturing Plants
- √ Utility Plants
- √ Large Service Plants

Highlights for October, 1956

South Atlantic

Gulf Menhaden Fisheries, Inc. laying plans for $250,000 processing plant at **Apalachicola, Fla.** . . . $20,000,000 cement plant to be located in **Miami, Fla.** for **Lehigh Portland Cement Co.** . . . Storage facility for hardwood chips and pulp, costing $1,500,000, underway at **Pensacola, Fla.** for **St. Regis Paper Co.'s** Kraft Center . . . $4,000,000 defense plant being constructed in **Pinellas County, Fla.** for **Minneapolis-Honeywell Regulator Co.** on a 95 acre tract . . . Spring production anticipated for **NRC Metals Corp.'s** zirconium plant at **Pace, Fla.**

Atlanta, Ga. will see the construction of an $85,000 metal products mfg. plant for **Superior Steel Fabricating Co.** . . . $100,000 concrete products plant planned in **Atlanta, Ga.** for **Concrete Mfg. Co.** . . . 56,000 sq ft building addition planned in **Clarksville, Ga.** for **Scoville Mfg. Co.** . . . **Chevrolet Division of General Motors Corp.** to construct $2,000,000-$3,000,000 warehouse and zone office in **Doraville, Ga.** . . . Underway is the $2,000,000 **Atlanta Gas Light Co.** propane gas plant at **Jonesboro, Ga.** which will store 1,330,000 gallons of gas . . . Early 1957 completion anticipated for **John W. Eshelman & Sons'** feed plant at **Chamblee, Ga.**

Cerlist Diesel Inc. erecting an assembly plant for high speed lightweight diesel engines in **Burlington, N. C.** . . . 25,000 sq ft children's sportswear manufacturing plant underway at **Chadbourn, N. C.** for **Chadbourn Mfg. Co.** . . . **Foote Mineral Co.** of **Kings Mountain, N. C.** planning a 2 year improvement project, to cost $500,000 . . . **Mid-State Tile Co.** being formed at **Lexington, N. C.** with the erection of a $300,000 ceramic tile plant . . . $1,000,000 steel service plant underway for **Joseph T. Ryerson & Son, Inc.** at **Pinoca, N. C.** . . . An 11 acre tract in **Raleigh, N. C.** is the site of the $1,200,000 **International Paper Co.** plant . . . 300 ft chimney being erected for **Halifax Paper Co.** at **Roanoke Rapids, N. C.** for $239,000—part of $3,000,000 chemical recovery system. . . . **Timme Corp.** expanding to the sum of $600,000 at **Wilmington, N. C.**

October completion expected in **Greenville, S. C.** for the warehouse, sales office and pilot weave room of **H. F. Livermore Corp.** . . . **Southeastern Loom & Machine Works** moving from Greenville to its new plant underway in **Greenwood, S. C.** . . . $300,000 addition to **Edisto-Hanahan Pumping System** underway at **Charleston, S. C.**

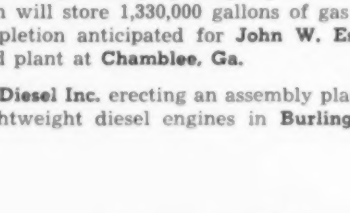
$180,000 **Gordon Garment Co.** plant being constructed in **Bristol, Va.** . . . **Sollitt Construction Co.** erecting the $55,000,000 Clinch River Plant of **Appalachian Electric Power Co.** in **Carbo, Va.** . . . Spring, 1957 completion expected for $1,200,000 filtration plant for **Lynchburg, Va.** . . . **Blue Bell, Inc.** constructing a branch plant, costing $115,000, at **Madison, Va.**

Armco Steel Corp. planning a $5,000,000 sintering plant for **Ashland, W. Va.** — one phase of the company's $15,000,000 expansion program . . . Plans being effected for $3,500,000 expansion of **Wheeling Steel Corp.'s Benwood, W. Va.** works plant . . . 32 acre tract in **Huntington, W. Va.** will be the site of the $100,000 plant for **Pilgrim Glass Corp.** . . . 22,000 sq ft branch plant underway in **Martinsburg, W. Va.** for **Sexton Can Co.**

East South Central

Thorsby Mfg. Co. will begin operation upon completion of its $200,000 blouse plant at **Thorsby, Ala.** . . . $7,000,000 manufacturing plant of primary magnesium for earth satellites planned by **Brooks & Perkins, Inc.** in **Selma, Ala.** . . . Plans underway for $721,000 sanitary sewer extension for **Monroeville, Ala.**

Concrete pressure-pipe plant underway on 20 acre site in **Hattiesburg, Miss.** for **Price Brothers Co.** . . . $3,000,000



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BETTER FASTER

Low Temperature EUTECTIC WELDING ALLOYS

STRONGER WELDS

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Plant, Research Laboratories and World Headquarters

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NOW—KIRKSITE DIES CAN BE REPAIRED EASILY

Modern metallurgy has opened the door to a practical, low cost way to weld zinc die castings. This development by Eutectic Engineers permits repairing formerly discarded costly Kirksite dies.

Safe, sure, fast welding of zinc die castings is assured with EutecRod 196, the modern "Low Temperature Welding Alloy" specifically formulated for zinc alloys. This advanced alloy now saves industry thousands of dollars by reclaiming damaged and worn castings. EutecRod 196 is an easy-to-use bead forming alloy, perfect for build-up of worn or missing parts.

The low heat required eliminates the need to fuse and possibly damage the parent metal as with conventional welding materials. This means rapid joining of zinc die castings without puddling or melting the base metal, and preclusion of distortion or warpage caused by high heat. EutecRod 196 is used with Eutector Flux 196, applied first and heated. Liquefaction of the flux indicates the proper temperature for application.

Welded Kirksite mold ready for service

In addition to being a perfect color match for zinc die casts, EutecRod 196 is highly fluid. It can be used to join zinc die cast to other metals – brass, bronze, even aluminum. Large sections can be rebuilt by first melting the alloy on a cold plate and then joining the built-up alloy to the original part.

TOOL AND DIE SHOPS SAVE THOUSANDS WITH TINNING

Carburizing steel for tools and dies presents problems. It is often desirable to have parts of the metal remain soft for ease of subsequent drilling. Many tools require threading after carburizing. The usual process of welding pads on the piece before carburizing, and then machining off the pad, often leaves surplus metal when the pad is cut off.

Using Eutec-TinWeld, a paint-on, solder-type paste, also a perfect tinning compound, saves thousands of hours and dollars. Simply paint it over the area to be kept soft or protected. A torch melts the Eutec-TinWeld which later runs off during the heat treating. The area where it was applied remains soft. Base metal should be clean and oil-free before application.

"LOW HEAT INPUT" INCREASES PRODUCTION 500%

Excessive, costly rejects while fusion welding three copper pipes to a machined bronze casting led an Eastern manufacturer of heating equipment to check for savings with modern fabricating.

The brazing technique was tried. .388 ounce of filler alloy and nine minutes were saved on each assembly. A Eutectic District Engineer then suggested a cost analysis test with EutecRod 1801, a special capillary thin-flowing high silver alloy used with Eutector Flux 1801.

The three tubes were pre-fluxed and set up simultaneously; a large torch tip producing a broad flame was used. When the flux liquefied EutecRod 1801 was fed into the joint. The moving torch plus the superior capillarity of EutecRod 1801 prevented localized overheating and distortion as uniform fillets formed around the entire circumference of each tube.

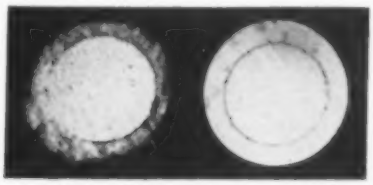
Even less skilled weldors produced perfect joints with thin flowing EutecRod 1801. Filler alloy required was cut from nearly two ounces of conventional alloy to 2/10 ounce of EutecRod 1801. Simultaneous joining of the three pipes increased production over 500%. The joints showed superior strength, corrosion resistance and "eye appeal." EutecRod 1801 reduced working temperatures at least 600 degrees F. Distortion and warpage were eliminated; the tubes perfectly parallel.

Overall view of the three fabrication methods. Left—fusion method showing heavy fillets, poor appearance and considerable distortion. Center—"brazing" results in better appearing, although still excessive fillets and some distortion. Right—EutecRod 1801 produces smooth, thin fillets and no distortion.

EUTECTRODE 2101 FOR ALUMINUM DRAWS APPLAUSE

A welding company writes us about "The remarkable performance of the new EutecTrode 2101 with extruded coating . . . in our early work, extensive tests were made using inert-gas arc, oxy-acetylene torch, and DC arc welding with commercially available aluminum electrodes, with hand dipped coatings. With EutecTrode 2101, we are able to get the desired quality of welds with 33% less preheat, 80% less rework to free slag in the difficult-to-reach areas, and with 25% less amperage. Superior wetting action with minimum spatter was apparent immediately."

Evidence of the superior performance of the new EutecTrode 2101 continues to come in. Air brake assemblies developing cracks from freezing were repaired using EutecTrode 2101, saving hundreds of castings costing $48.50 each. Spider ends of truck trailer wheels were repaired with fast melting, "Low Amp" EutecTrode 2101 without warpage or distortion. Housing for a Boston gear reduction unit was repaired in one hour with EutecTrode 2101 when mounting lug cracked. The repair was made with the lubrication left in the housing.



Conventional aluminum electrodes with hand dipped coatings (photomicrograph, left above) cannot provide the amazing arc stability, the absence of fingernailing and tailing, and the all-position weld-ability of the new EutecTrode 2101 with smooth extruded coating (right, above).

XYRON 2-25 SAVES $20,000 CONDENSER

A West Coast manufacturer expected a costly salvage job on a smashed $20,000 cast iron condenser. About 150 lbs. of the new, advanced, porosity and crack-free, strontium-aluminum bearing "Low Amp" Xyron 2-25 for cast iron and alloy cast irons produced a highly successful repair. "Eutectic's" ChamferTrode was used to chamfer out the cracks. The entire job was done in 99 man-hours.

Increasing use of nodular, ductile cast irons has introduced a new group of problems never before experienced in repairing and fabricating gray cast iron. Crack-free, Xyron 2-25 makes it ideal for the newest alloys. Its advantages over conventional nickel electrodes—essentially non-cracking and low heat input—makes it ideal for repair of cracked motor blocks, machine bases, motor and gear housings, transmission cases, cams, levers and for building up missing sections, filling in holes and defects.

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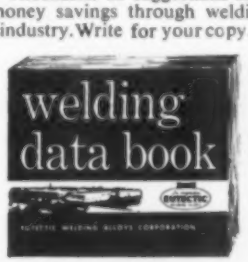


"EUTECTIC" WELDING HEADLINES • TIME-MONEY-MACHINERY SAVERS

water plant expansion proposed for **Jackson, Miss.** . . . **Vickers Inc.** constructing hydraulic equipment manufacturing plant for the **Air Force** in **Jackson, Miss.** . . . $750,000 factory planned for **Mission Appliance Co.** in **New Albany, Miss.**

Memphis Light, Gas & Water Div. erecting $5,000,000 pumping station at **Memphis, Tenn.** . . . October completion scheduled for **Nashville Concrete Pipe Co.'s** $150,000 plant at **Nashville, Tenn.**

West South Central

Missouri Charcoal Fuel Corp. to erect $100,000 mfg. plant at **Cotter, Ark.** . . . $750,000 **Norris Dispensers, Inc.'s** metalworking plant underway at **Hot Springs, Ark.** . . . **Paragould, Ark.** will be the home of **Emerson Electric Mfg. Co. of St. Louis'** fractional hp motor plant — to cost $575,000 . . . **United Wood Corp.** erecting at **West Memphis, Ark.** a $500,000 wood composition board mfg. plant.

Plans underway for $8,000,000 chemical plant for **Wyandotte Chemicals Corp.** at **Geismar, La.** . . . Fluor Corp. Ltd. to design, engineer and construct a gasoline extraction plant at **Eunice, La.** for **Union Oil & Gas Corp.** and **Texas Gas Exploration Corp.** . . . December completion anticipated for **Firestone Tire & Rubber Co.'s** expansion program in its **Lake Charles, La.** plant.

$2,000,000 expansion planned for **Midland Cooperatives, Inc.** at **Cushing, Okla.** . . . **Callery Chemical Co.** to construct at **Muskogee, Okla.** a $38,000,000 high energy fuel-producing plant for **U. S. Navy Dept.**

Plans being effected for $6,000,000 expansion of the helium plant at **Exell, Tex.** . . . **Temco Aircraft Corp.** improving its **Greenville, Tex.** plant to the sum of $940,000 . . . $3,000,000 expansion program planned for **General Foods Corp.'s** plant at **Houston, Tex.** . . . Underway on a 3 acre tract in **Houston, Tex.** is **Electro-Technical Labs, Inc.'s** $335,000 plant . . . $600,000 expansion planned for **Bell Aircraft Corp.** at **Hurst, Tex.** . . . **Maxwell House Div. of General Foods Corp.** to expand in **Houston, Tex.** — to cost $15,000,000 . . . **Longview, Tex.** awaiting the $1,250,000 expansion of **Premier Oil Refining Co. of Texas** . . . Multi-million dollar **Odessa Butadiene Co.** plant underway at **Odessa, Tex.** . . . The first of two units for **Firestone Tire & Rubber Co.'s** butadiene plant at **Orange, Tex.** will begin operations by the first of the year -- both units to cost $24,000,000 . . . $3,000,000 sewage disposal plant planned for **Port Arthur, Tex.** . . . $1,000,000 tubing plant to be built in **Rosenberg, Tex.** by **Gulf States Tube Corp.** . . . 200 acre tract in **Richardson, Tex.** will be the site of **Collins Radio Co.'s** 105,000 sq ft plant.

Kansas and Missouri

Vickers, Inc. to spend $1,250,000 for new equipment for its **Joplin, Mo.** plant . . . **Hercules Powder Co.** and **Imperial Chemical Industries, Ltd.** to combine forces in **Louisiana, Mo.** for the construction of $11,000,000 plant to manufacture methyl methacrylate . . . Spring completion scheduled for $33,000,000 uranium processing plant at **Weldon Springs, Mo.** . . . **Rawling Mfg. Co.** to erect a $190,000 branch plant at **Willow Springs, Mo.**

National Power Show — November 26-30

New York City's brand new modern Coliseum at Columbus Circle will be the location of the **22nd National Exposition of Power and Mechanical Engineering.** Exposition is again under the auspices of The American Society of Mechanical Engineers and will be simultaneous with the Society's 76th annual meeting.

The exposition will scan the entire panorama of materials and equipment for the production, distribution and application of power, together with power uses in mechanical engineering. Over 300 exhibits will cover the generation and utilization of power and steam.

For free advance registration information and blank write: International Exposition Co., 480 Lexington Ave., New York 17, N. Y.

Exhibit Highlight Data

Equipment for the **production and use of steam** will constitute a large proportion of the exhibits at the Coliseum, for the reason that steam is universally employed in power production and in many and varied operations employed by all manner of industries. There will be a comprehensive display of package boilers, as well as components for high-power steam generators, which are individually designed. Steam engines, turbines and turbo-generators will represent the field of prime movers.

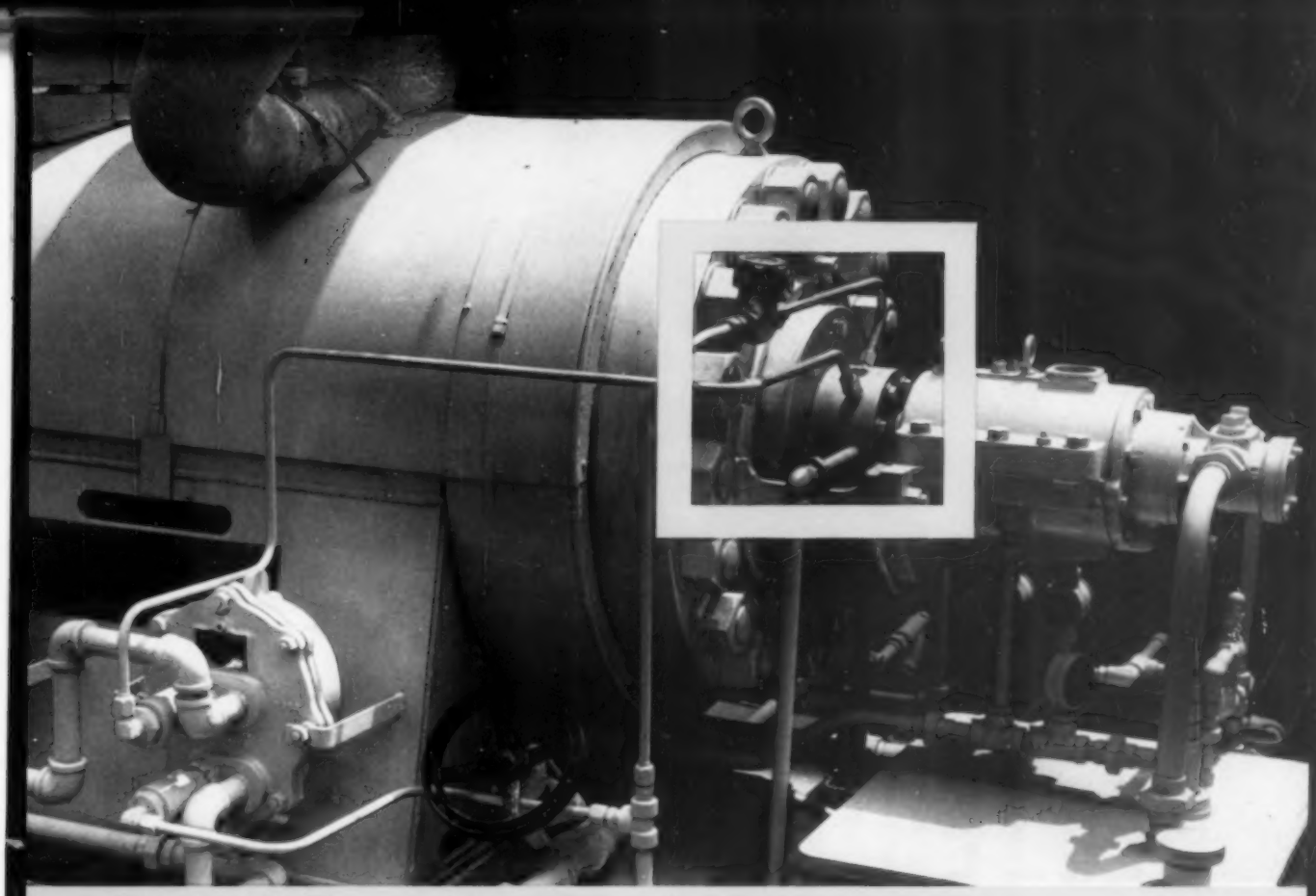
Components used in steam generation will include: burners, refractories, insulation, sludge solvents, dust control apparatus, gas scrubbers, tubing, pipe and pipe fittings and supports, flexible and expansion joints, seals and packings, valves and valve controls, traps, pumps, fans and blowers, among others. Many exhibitors will offer equipment and supplies for installation and maintenance of plants, such as packing and gaskets, tube expanders and cleaners, gas analyzers, gages and indicating instruments of many kinds.

The exposition will make news in its newest feature, the **atomic section,** which is expected to produce striking disclosures among the widening applications of nuclear physics. One display will show a model of the first privately financed critical facility and also an environmental test capsule, said to be the only one available which controls temperature accurately in reactor environment. There will also be research reactor models, a gas turbine for atomic plant use, and material relating to various operations in the application of atomic energy.

Electrical equipment will be strongly represented, not only in power units, such as a variety of motors and motor drives, but in supplementary applications in factory and field. There will be displays of cable testers, dielectric testing and cable fault locating equipment, ac-dc converters, frequency changers and testing equipment, variable speed drives, diesel generating sets, and others.

The newest equipment for overpotential testing will be exhibited. A large public utility recently purchased a set of this equipment and afterward testified that in one test, the saving over previous methods

(*Continued on Page* 40)



City of Pasadena realizes

Big Savings on Boiler Feed with BJ Mechanical Seals

The City of Pasadena Light and Power Department has been using BJ Mechanical Seals in high temperature, high pressure boiler feed service for more than a year. These seals are installed on three double case boiler feed pumps with suction pressures to 400 psi, temperatures of 427° F. and an operating speed of 3550 rpm. The seals incorporate a pumping ring and small Graham Heliflow heat exchanger. Here are the results:

1. SAVINGS ON MAINTENANCE—Stuffingbox maintenance has been completely eliminated since installation of the seals. There has been no repacking labor cost . . . no pump shut-down loss.

2. SAVINGS OF TREATED FEED WATER—Previous to BJ Mechanical Seal installation, considerable loss of expensive, prepared feed water occurred. Now leakage loss is imperceptible.

3. SAVINGS OF HEAT—BTU's formerly lost through stuffingbox leakage are now sealed in for greater overall boiler feed operating efficiencies.

YOU CAN ACTUALLY COUNT THE SAVINGS IN LOWER COST OF KILOWATTS!

If you are operating high temperature, high pressure boiler feed pumps it will pay you to investigate now the big savings available from BJ Mechanical Seal installation.

Contact your BJ Pump Sales Engineer or write:

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Booklet A-382 describes all Otis Vertical Transportation equipment and services.

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What is the Bailey Building Block Method? It's using standardized Bailey measuring, transmitting, and controlling components and combining them into any system you need. Components can be added as needed . . . removed and reused elsewhere . . . recombined into another system when the need changes. It's flexibility plus!

It's all based on the simple fact that a Bailey instrument or control component doesn't care if the measured variable is steam flow, tank level, or heater temperature, to pick just three examples. System components—transmitters, receivers, relays, selector stations, power units—are standardized for multi-purpose use.

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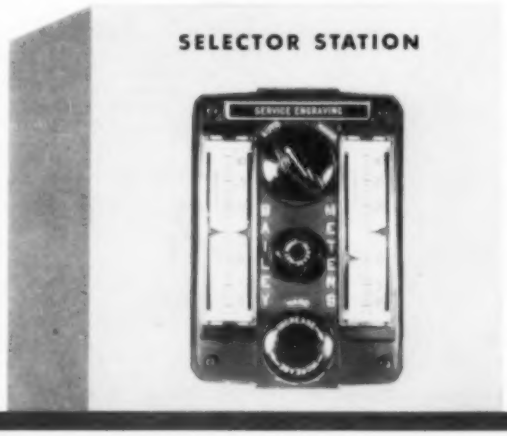
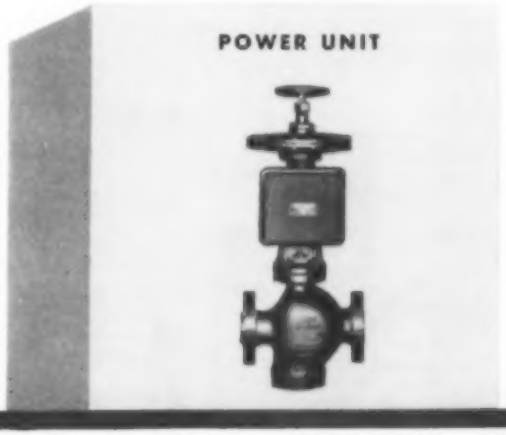
For further details, call our local district office or write us at Cleveland. Our engineers will be glad to prove how the Building Block approach will save you money and simplify your instrument and control problems.





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1—Package Boiler — New compact, low cost package unit (oil or gas fired) for small space requirements is described in Bulletin DK-1. Pressures to 325 psi, steam capacities to 45,000 lb/hr.—E. KEELER CO.

2—Stoker—New bulletin describes the type C-C RotoStoker, a spreader stoker that automatically cleans the fuel bed and discharges the ash continuously at the front. Operates without smoke thru wide load range. — DETROIT STOKER COMPANY.

13—Power Plant Equipment — 12 page booklet No. 1022-A gives details on combustion and boiler feedwater control, pressure reducing, desuperheating and automatic soot blowing — retractable and rotary. — COPES - VULCAN DIVISION, BLAW-KNOX COMPANY.

16 — Small Boiler Performance — Brochure shows how the packaged Ljungstrom air preheater boosts performance. Boilers are small as 25,000 lb/hr can have advantages of regenerative preheating—saves fuel, boosts output, and permits use of lower grade fuels.—THE AIR PREHEATER CORPORATION.

35 — Unit Steam Boilers — Catalog AD-100 — Gives complete information on oil and gas fired "Self Contained" boilers, 15 to 500 hp, 15 to 250 psi for processing and for heating. Gives features, applications, efficiencies, capacities and dimensions.—CLEAVER-BROOKS CO.

48—Boiler Tubes—Booklet describes complete stock of boiler tube sizes and gauges for any make boiler; spares when you need them; specialty bending for any need. — BOILER TUBE CO. OF AMERICA.

51—Steam Generators — Catalog 811 describes 18 sizes from 20 to 600 Bhp for fully automatic operation burning oil, or gas, or both; pressures to 250 psi; 80% thermal efficiency guaranteed. — SUPERIOR COMBUSTION INDUSTRIES INC.

61—Ash Removal — Bulletin P-56 shows how costs can be reduced with a National pneumatic steam-operated or motor-driven air exhaust type system. High operating efficiency based on tons of ash handled per pound of steam used.—NATIONAL CONVEYORS COMPANY, INC.

87—Steam Turbines—Single Stage—Bulletin 500 describes features and characteristics of company's type DH steam turbines in horizontal and vertical models. — DEAN HILL PUMP COMPANY, INC.

FANS—PUMPS—COMPRESSORS HEATERS—HEAT EXCHANGERS

106—Compressor Valves — Bulletin illustrates Voss valves, used to replace original valves in compressors of any size, type, and make. Applications, advantages and efficiency under severe operating conditions outlined.—J. H. H. VOSS CO., INC.

110 — Deaerator — Publ. 4651 describes design that eliminates tubular vent condensers without impairing efficient purging of non-condensible gases. Unit handles wide range of operating conditions. — COCHRANE CORPORATION.

113—Service Pumps—Bulletin No. B-505 gives complete information on the company's vertical industrial service pumps.—PEERLESS PUMP DIVISION.

124—Blowers, Fans, Heaters, Drives—Bulletin B-4729 — Describes the comprehensive and complete line of equipment manufactured by American Blower for practically every known air handling requirement and for smooth transmission of power through Gyrol fluid drives.—AMERICAN BLOWER CORP.

128—How to Solve Pumping Problems—Booklet, 36 pages — Explains the functions and characteristics of Rotary gear pumps; sample application problems with charts and curves on pipe friction losses, viscosity conversion tables, materials of construction for various liquids, and additional information pertaining to pump applications.—GEO. D. ROPER CORPORATION.

138—Steam Pump Maintenance — Bulletin G-2280 P, 23 pages, "How to Install and Take Care of Steam Pumps" gives 28 tips on proper installation and 54 tips on field-proven care techniques. — WORTHINGTON CORPORATION.

160—Boiler Feed Pumps—12 p Bulletin 122 describes and illustrates the type BFI high pressure pumps. Design features, service ratings and engineering data included.—PACIFIC PUMPS, INC.

162—Condensate Return Pumps — Catalog No. H-1 includes photos, dimension drawing, selection tables, and operating data on "NCR" Single and "NCRD" duplex condensate return pumps, especially designed for low pressure steam heating systems and which handle condensate up to 200 F.—C. H. WHEELER MFG. CO., ECONOMY PUMP DIV.

165 — After-Cooler — Bulletin 130 shows how the Aero unit removes moisture from compressed air or gases; "cools water for jackets and intercoolers; cools air or gases in both power and process systems; and protects air tools and pneumatic systems from water damage.—NIAGARA BLOWER COMPANY.

INSTRUMENTS—METERS CONTROLS—REGULATORS

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221—Boiler Water Level Controls—Catalog describes control using magnetic operating principle. Up to three switch mechanisms can be furnished in standard models. Styles for nearly all pressures.—MAGNETROL, INC.

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263—Meters and Controls—8 page Bulletin G15-1 describes measuring, transmitting, receiving, recording, and indicating instruments and control components for power and process applications. Includes literature reference for each product as well as twenty-four instrument and control applications.—BAILEY METER COMPANY.

264—Level Controller—32 page Bulletin F-4 describes the principle of operation of the displacement type float and illustrates the construction available for many applications that can use this pneumatic level controller.—FISHER GOVERNOR COMPANY.

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315—Pressure Vessels—Catalog 100 discusses your plate fabrication problems and shows how company custom-fabricates hot water storage heaters, tanks, air receivers, blow-off tanks, etc. Corrosion resistant linings and materials featured. Suggested specifications and other valuable technical data given. — J. J. FINNIGAN CO.

318 — Wrought Iron — "ABC's of Wrought Iron" — A concise digest of more detailed technical handbook material on wrought iron —describes resistance to corrosion, fabrication process — where needed — shock and vibration endurance.—A. M. BYERS.

326—Grating—Flooring — Catalog, 12 pages — Gives picture story of "Weldforged" steel grating, flooring and stair treads — continuous spiral cross bars, alternating right and left, and slightly above bearing bars, electronically weldforged into inseparable units to insure greater non-skid protection and durability. —KERRIGAN IRON WORKS, INC.

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351—Steel Grating & Treads—Bulletin 2486 describes electroforged steel grating and treads, their advantages and typical successful applications. — BLAW-KNOX EQUIPMENT DIVISION, BLAW - KNOX COMPANY.

375—Welding Service — Sheet TIS 2600 describes new welding advisory service. Survey highlights operations where metal joining, machinery repair and overlaying for wear resistance can be increased profitably.—EUTECTIC WELDING ALLOYS CORPORATION.

386—Rigid Frame Buildings—8 page bulletin "Dixisteel Rigid Frame

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414—Safety Valves—Catalog 700A describes the company's line of bronze, cast iron and steel type safety valves. Whatever the working pressure, protection is assured, as is outstanding performance and economy. — MANNING, MAXWELL & MOORE, INC.

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420—Valve Controllers—30 p Catalog L-550 describes Limitorque motor-operated valve controllers which may be actuated either remotely or manually to open and close all types of valves. Readily adapted to microwave control. — PHILADELPHIA GEAR WORKS, INC.

422—Motor Pump—Liquid handling applications described in general bulletin. Sizes from ¼ to 75 hp, 5 to 2800 gpm with heads to 650 ft. —INGERSOLL-RAND.

431—Steam Trap Book — 44 page steam trap book plus two reprints—"Flash at Traps" and "Vacuum Isn't Vacuum."—ARMSTRONG MACHINE WORKS.

450—Reducing Valve—Bulletin 561 describes the no maintenance reducing valve which is used in steam process and heating lines and which has unlimited uses for any steam reductions within body material limits (250 psi, 450 F).—LESLIE CO.

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483—Unions & Swing Checks—Catalog 11, 24 pages — Gives engineering data and specifications on a complete line of hot forged steel pipe unions and swing check valves.

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SOUTHERN POWER AND INDUSTRY
806 Peachtree St., N. E.
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Special section devoted to Double-Start Unions, which provide faster opening and closing.—CATAWISSA VALVE & FITTINGS COMPANY.

491—Control Valves—Catalog 1500-B, illustrated — Describes complete line of Domotor, solenoid-operated and handwheel single seat control valves for handling difficult fluids under extremes of temperature and pressure. Offers full, unrestricted flow, positive plug and seat alignment and directional flow flexibility. —THE ANNIN COMPANY.

MAINTENANCE PACKING GASKETS, LUBRICATION

508—Spray Lubricant — Data sheet describes the Marla open gear spray lubricant in Aerisol cans for use on open gears, cams, monorails, guides, chains, sprockets, etc. Economical, heavy duty and easy-to-use. —ROTHLAN CORP.

511—Maintenance Ideas—"Genius at Work"—Contains ideas about plant maintenance, bits of philosophy, new products and a description of the company's line. — KANO LABORATORIES.

512 — Lubricator Vacuum Type Pumping Unit—If your plant is experiencing difficulty with visibility and excessive maintenance on lubricator sight glasses, the new 82 vacuum pumping unit will offer lower costs. Form 1263 gives principle of operation and advantages—MANZEL.

528—Industrial Products — Bulletin GI-6A, 40 pages — Describes J-M industrial products intended to save industry millions of dollars every year — insulations, refractory products, asbestos-cement pipe, packings and gaskets, electrical products, friction materials, roofing and siding, flooring, partitions and ceilings. — JOHNS-MANVILLE SALES CORPORATION.

545—Correct Lubrication — "Lubriplate Data Book" shows importance of providing and maintaining proper and economical maintenance of all types of plant machinery thru adequate lubrication. — FISKE BROTHERS REFINING CO.

552—Packing Removal Tool — Bulletin DHSP describes the Dura Hook that "works around corners" for removing old packing from stuffing boxes.—DURAMETALLIC CORPORATION.

564 — Anti-Corrosive Paints — Bulletin, "The Application of Subox and Subalox Paints" — Gives the story of a complete paint system for weather, moisture and alkali protection, with details as to application.—SUBOX, INC.

ENGINES, DRIVES POWER TRANSMISSION MATERIALS HANDLING

600—Conveyor Idlers — Bulletin SI-116 describes pre-lubricated "UST" Conveyor Idlers. Incorporating Timken bearings and Garlock Klozures, construction permits operating without lubrication for 1-3 years or more. — CONTINENTAL GIN COMPANY.

603—Monorail Case Studies — File F-1—Offers 20 new studies of engineered monorail applications in various industries. Factual information, complete with photos and plain drawings. — AMERICAN MONORAIL CO.

604—Motor Units—Catalog 51 describes motor units for accurate performance and longer, lower cost life for operation of valves, floorstands and sluice gates. — CHAPMAN VALVE MANUFACTURING CO.

605—Coupling Selection Chart—22" x 17" chart greatly reduces the time necessary to select a flexible coupling. Big time saver to help you choose the right coupling for your job.—MORSE CHAIN COMPANY.

624—Freight Elevators—Booklet A-414 describes the new Plunger Electric Freight Elevator designed for low-rise, light and heavy duty freight handling requirements. — OTIS ELEVATOR COMPANY.

WATER TREATMENT, HEATING VENTILATING, AIR CONDITIONING REFRIGERATION, DUST & FUME CONTROL

701—Exhausting Corrosive Fumes—Bulletin 702-A shows how corrosive fumes can be exhausted with rubber, lead lined or specially coated fans.—CLARAGE FAN CO.

702—Water Conditioning — Bulletin 611A, 20 pages—Gives comprehensive data on methods of conditioning water for boiler, process and general use, featuring zeolite water softeners of "double-check" design. Data on filters, purifiers, zeolites, ion-exchange resins, de-gasitors. — ELGIN SOFTENER CORPORATION.

703—Air Conditioning—Bulletins 112 & 122 describe "controlled humidity" method where cooling and heating functions are made completely separate from adding or taking away moisture. No moisture sensitive instruments needed in flexible & compact design.—NIAGARA BLOWER CO.

711—Refrigeration Condensers—Bulletin RC-2 shows how Vogt condensers step up rate of heat transfer and step down head pressures. Closed type for clean waters; film type where water is hard and forms scale. Units save power and refrigeration cost.—HENRY VOGT MACHINE COMPANY.

714—Industrial Heaters — Bulletin P-154 — Describes "Panelbloc" infra-red unit heaters available in 62,500 btu and 125,000 btu input. No fan, motor, or electrical connection is needed. Heating is accomplished by guided radiation. The units may be used with any commercial type gas fuel.—THERMOBLOC DIV. OF PRAT-DANIEL CORP.

723—Dust Collection — Catalog describes mechanical and electrical systems which meet most rigid anti-air-pollution codes; low resistance fly ash collector which combines top efficiency with low draft loss for natural or forced draft installations. — BUELL ENGINEERING COMPANY.

725—Cooling Tower — Bulletin CT-56-1 gives construction and operational details of new induced draft cooling tower. — FOSTER WHEELER CORPORATION.

ELECTRICAL

800 — Cords & Cables — Bronco 66 Certified electrical cables described in new brochure. Electrical cords & cables made with 66% Neoprene jacket. — WESTERN INSULATED WIRE CO.

801—Motors—Bulletin describes and catalogs more popular a-c motors from 1 to 600 hp, for every process and manufacturing requirement. Single phase and polyphase; surpass NEMA specifications. — BROOK MOTORS COMPANY.

805—Power Factor Correction — 28 page catalog shows how you can cut power costs by installing correction capacitors on motors and other inductive electrical equipment. Greater loads can be handled from existing circuits. Wiring, transformer and switchgear costs can be greatly minimized in new installations.—SPRAGUE ELECTRIC CO.

811—Electric Heat—"100 Ways to Apply Electric Heat" gives a wealth of informative data on the use of electric heat in industry — fast, uniform, dependable, backed by nation-wide engineering service. — EDWIN L. WIEGAND CO.

842—Circuit Protection — Bulletin FIS describes the maintenance free Fusetron fuses which protect motors, solenoids, coils and transformers against burnout, and which increase production by eliminating needless blows.—BUSSMAN MFG. CO.

874—High-Voltage Cable—Bulletin EB-27 gives full details on performance of Type AB insulation in 15 Industry Specification Tests, including operating temperature. — ANACONDA WIRE & CABLE COMPANY.

SUPPLIES & MISC.

909—Industrial Skin Cleanser—Folder describes Vi-Lan Clean, a non-alkaline, non-acid, all-purpose antiseptic skin cleanser that prevents dermatitis and other skin conditions. Self-service dispensing units. — DAMERON ENTERPRISES, INC.

937—Steel Measuring Tapes—Complete catalog describes full line of measuring tapes from 6 to 100 ft, including wide blade tape with upright measurements. — EVANS RULE CO.

(More Items — Page 140)

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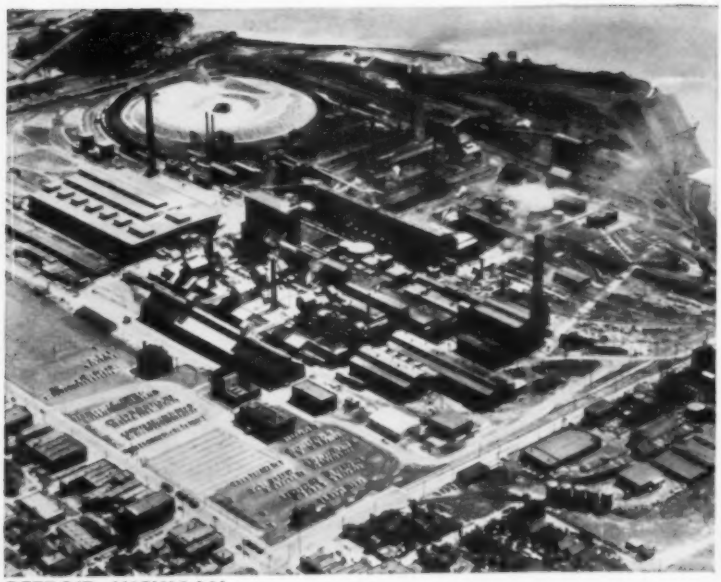
SOLVAY

75th YEAR 1881-1956

Diamond



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PLANTS OF SOLVAY PROCESS DIVISION, ALLIED CHEMICAL & DYE CORPORATION

d Jubilee of Service

Since 1881
B&W Has Supplied
Economical Steam For Solvay

Year after year, for 75 years, B&W has been privileged to supply boilers for various plants of the Solvay Process Division of Allied Chemical and Dye Corporation. The newest plant, now being built at Brunswick, Georgia, for operation later this year, will also be equipped with B&W units.

Solvay's confidence has been built on satisfactory experience with B&W Boilers of many types . . . has been strengthened by a 75-year record of performance and service. For example, in the comparatively short period from the start of World War II to date, this leading industrial company has ordered B&W boilers—including Integral-Furnace and Stirling Units—having a total steam capacity of over 2,000,000 lb per hr.

Advanced research and equipment development to *keep steam generating costs down for requirements of every size* is an established policy at B&W. Add an assurance of service that goes far beyond normal requirements, and you know why industrial, utility, and other users across the nation have made repeat orders an old story at B&W. The Babcock & Wilcox Company, Boiler Division, 161 East 42nd Street, New York 17, N. Y.

BABCOCK & WILCOX

BOILER DIVISION

G-589-T

HOFFMAN'S ENGINEERED SYSTEMS designed to do the tough jobs in industry

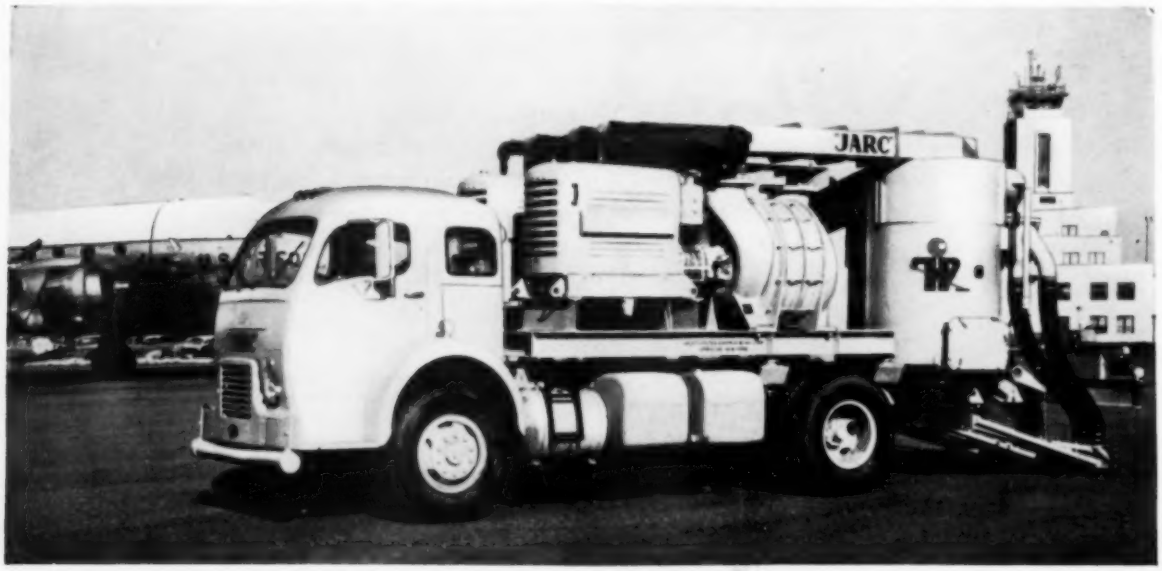
JET RUNWAY CLEANER ILLUSTRATES HOW STANDARD-DESIGN HOFFMAN BLOWERS ARE ADAPTABLE TO YOUR VACUUM-PRESSURE OPERATIONS!

Until recently, millions were spent every year on jet aircraft engine repairs and replacements, for want of a method for completely removing from runways such destructive debris as nuts, bolts, screws, aluminum scraps, sand, gravel, wood and other particles.

In their solution to the problem, Hoffman engineers selected two of Hoffman's standard-design centrifugal exhausters and mounted them on a truck unit. The machine they developed, the Jet Aircraft Runway Cleaner ("JARC"), provides a vacuum capable of cleaning and removing all unwanted material from an area of two million square feet in about eight hours. The six nozzles at the rear, spaced over an eight-foot vacuum surface, suck in air at a rate of 350 m.p.h.

The multistage exhausters on the "Jarc", like all Hoffman blowers, may be operated 24 hours a day continuously, day in and day out. They can also be depended on in other important respects: there is no pulsation or vibration, thanks to the dynamically balanced impellers. There are no gears or similar parts to wear or create mechanical noise. The air delivered is as clean and dry as that entering the intake, since there is no internal lubrication.

The "Jarc" is only one example of the almost infinite adaptability of Hoffman blowers. If you have *any* operations requiring the use of a low-pressure compressor or a high-pressure blower, discover how much expense and trouble you will save by installing blowers and exhausters made by Hoffman. Have our air appliance engineers call at your plant and discuss your requirements in detail.



Write for free bulletin M-103 to Dept. SPI.

AIR APPLIANCE DIVISION U.S. HOFFMAN MACHINERY CORP. 103 FOURTH AVENUE, NEW YORK 3, N.Y.

INDUSTRIAL FILTRATION DIVISION

Machine tool coolant clarifiers—flotation, mechanical and magnetic
Lubricating and insulating oil conditioners, filters and vaporizers
Solvent recovery systems—vacuum stills and filters

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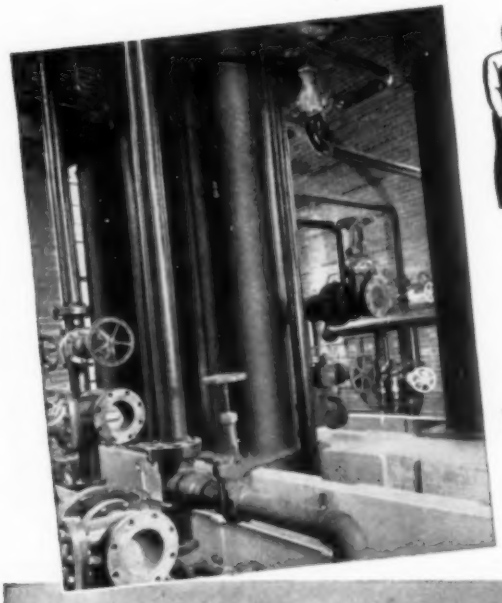
Multistage centrifugal blowers and exhausters
Pneumatic conveying equipment
Industrial vacuum cleaning—portable and stationary systems
Continuous metal strip driers
"Smoothflow" fittings and tubing

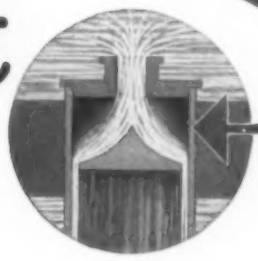
ORDNANCE EQUIPMENT DIVISION

Special pneumatic conveying systems
High-efficiency centrifugal separators
Stationary and portable vacuum-cleaning equipment
Process equipment
Pneumatic systems for radioactive materials

Dirty Water can't "Shut-down"...

Vogt

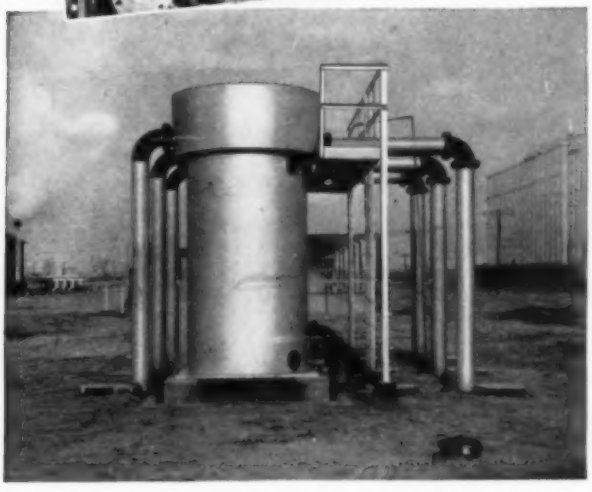




film type exchangers

(Condensers–Coolers–Evaporators)

Patent Nos. 1,935,270 - 2,057,597 - 2,424,441



River water, well water or brackish water are all alike to this exchanger *because it can be cleaned* while in operation! The water distributing ferrules need only be removed successively for the cleaning brush or tool whereby the tubes receive additional water which sluices away the dislodged dirt.

Vogt Film Type Exchangers are operating with real economy of first cost, operation and maintenance in power, petroleum, and chemical industries. They serve as Jacket Water Coolers, Feed Water Heaters, Hydrocarbon Evaporators, Sulphuric Acid Coolers, and Sulphur Dioxide Condensers, and can be designed to cool or heat any liquid and to condense or evaporate any fluid.

TOP: *Four units at Newton Falls, Ohio Municipal plant cool water for diesel engines and a lubricating oil cooler.*

BOTTOM: *Jacket Water Coolers serving engines of 7,300 HP in the compression plant of a Western Oil Refinery.*

[Bulletin HE-7 describes typical installations of Vogt Film Type exchangers and is available upon request. Dept. 24-X5.]

HENRY VOGT MACHINE CO., LOUISVILLE, KY.

Sales Offices: NEW YORK, CHICAGO, CLEVELAND, DALLAS, PHILADELPHIA, ST. LOUIS, CHARLESTON, W. VA., CINCINNATI

Trouble-free operation of QC Boilers

SAVES TIME, LABOR and MONEY

for Staunton Military Academy!

Staunton Military Academy, Staunton, Va.

Battery of QC Boilers in service at Staunton.

Central power plant now operates with increased overall efficiency!

Boiler plant modernization has more than proved its worth at Staunton Military Academy!

During 1954, three 150 H.P. oil-fired Queen City "bent tube" water tube boilers were installed to replace three stoker-fired fire tube boilers.

This battery of QC Boilers has produced with ease the 19,000 lbs. of steam per hour required for the heating load!

The switch to QC Boilers has resulted in a total lower cost of power plant operation, has eliminated costly maintenance problems and delivers quicker and more uniform heat throughout the multi-building institution.

For all-round boiler efficiency, install a QC water tube boiler in your plant. No matter what the fuel . . . oil, gas, coal, combination gas-oil . . . Queen City Boilers give you more steam, faster and drier, for less cost! Available from 300 to 17,500 lbs./steam/hr., up to 250 psi.

For complete information, write

QC BENT TUBE

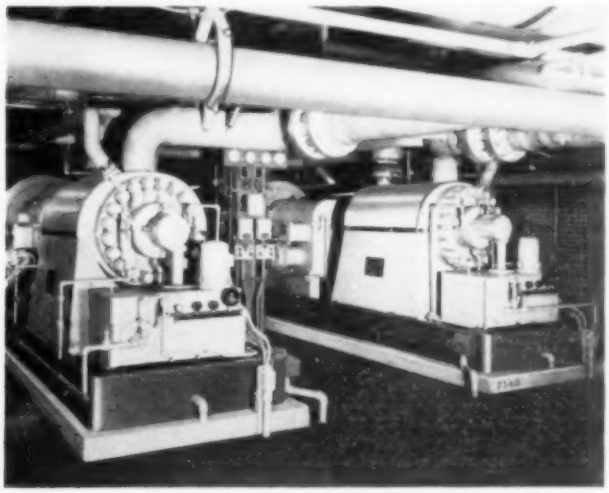
Queen City Engineering Co.

P. O. Box 3103 CHARLOTTE • NORTH CAROLINA

Keeping up with the Kilowatts

PACIFIC BOILER FEED PUMPS FOR ELECTRIC UTILITY SERVICE

▲ Two Typical Pacific Boiler Feed Pump Installations ▼



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ALABAMA POWER *Company*
ATLANTIC CITY ELECTRIC *Company*
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All the features you asked for make 1956

RM* Medium Transformers

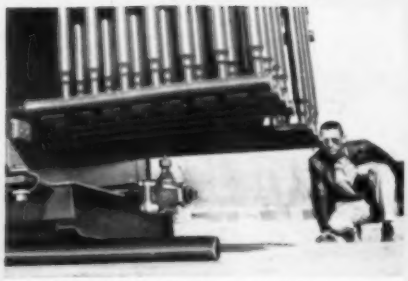
Your Best Buy

For further information on G-E Medium Transformers, contact your nearest G-E Apparatus Sales Office, or write Section 416-6, General Electric Company, Schenectady 5, N. Y.

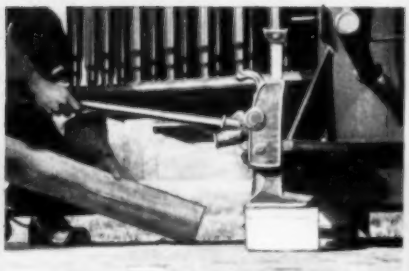
*Repetitive Manufacture

Progress Is Our Most Important Product

GENERAL ELECTRIC



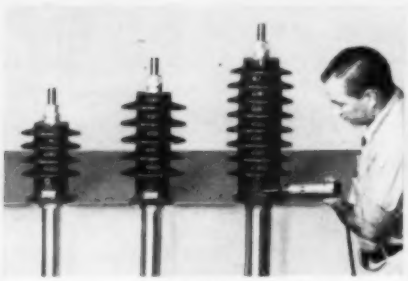
SLED-RUNNER BASE on all G-E RM transformers slides easily or rides smoothly over rollers, makes installation simpler. Wide face on I-beam will not cut rollers.



LIBERAL JACKING SPACE cuts installation time and effort. Minimum of 5½ inches between jackpad and ground provides more-than-adequate clearance for most jacks.

CONTROL CENTER groups all instruments and nameplate in one easy-to-see area; improves visibility, makes readings extra simple. Chances of error are reduced.

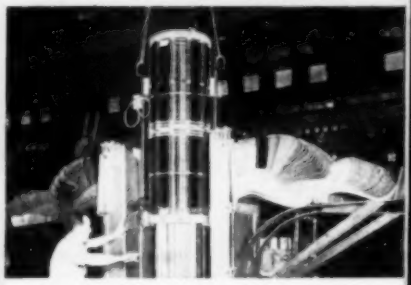
PROTECTED ACCESSORIES are recessed behind cooling tubes, sheltered against damage from blows that might be encountered during shipping and installation.



AMERICAN STANDARD BUSHINGS, used on all General Electric Repetitive Manufacture Medium Transformers, enable you to reduce your bushing inventories.

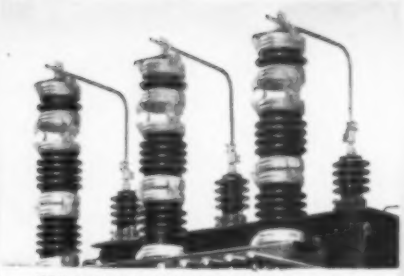
FULL DRAIN permits complete filtration, removes worst bottom oil. Sampling is more accurate, since sample is drawn from region of greatest contamination.

FORMEX* insulation is extremely rugged, has phenomenally high dielectric strength. Permits more compact, lighter RM transformers. *Reg. Trade-mark G.E. Co.



PRE-FORMED CORE, used in single-phase RM medium transformers, reduces core losses since magnetic flux path follows grain in core laminations, even at corners.

VENTILATED BASE permits free air circulation, helps prevent moisture from condensing under transformer, minimizes rusting and corrosion in this hard-to-reach area.



PRE-FITTED CONNECTORS between bushings and G-E Magne-valve lightning arresters simplify field installation, give better lightning protection.

REVERSIBLE JUNCTION BOX readily adapts to overhead or underground system, simplifies ordering and interchangeability, provides additional flexibility.

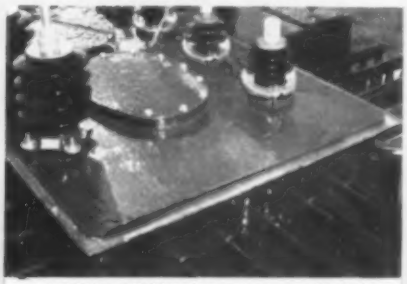
ONE CONTROL CONDUIT simplifies field wiring of accessories and controls. Connections for entire transformer are made to a single terminal board, shown above.

TILTED INDICATORS. Where control center group is sufficiently high above ground, indicators are tilted at proper angle to make instrument reading easier, more accurate.

CONDUITS AND FITTINGS for all control wiring are weather-tight, can be field assembled in minutes without cutting threads. Cover plate gasket is re-usable Nitrile.

NITRILE GASKETS resist weathering, seal without adhesives; no chipping required for removal. Re-usable again and again, they permit reduction of gasket inventories.

SUPER MELAGLYP FINISH saves up to two repaintings, is longer lasting in corrosive atmospheres. Metal is specially prepared for better adhesion, more uniform coating.



DOMED COVERS let water run off, help prevent dirt and rust from accumulating. Flanges around openings prevent foreign matter or moisture from rolling into tank.

SPRAY-ON PAINT, provided with every RM transformer, permits touching up of spots chipped or scraped during shipment or installation, before rust gets foothold.

WEDGE-TYPE TAP CHANGERS have rugged self-aligning contacts with wedging action to assure line contact. They can carry transformer's full-rated short-circuit current.

LARGER MANHOLES, introduced this year, mean easier accessibility to interior; allow easier and more accurate inspections. Even a husky man has plenty of room.

GENERAL ELECTRIC

"this is

● Engineers tell us Yarway Remote Liquid Level Indicators are the most dependable boiler insurance they can have.

Instant . . . accurate . . . brilliant . . . continuous readings of boiler water level are seen on the panel or wherever you wish in your plant. You know the readings are right because they are controlled by the boiler water itself . . . by the pressure differential between a constant head of water and the varying head in the boiler drum. *Indicating mechanism is never under pressure.*

Yarway Indicators may be equipped with a Yarway Control Unit that operates Remote Hi-Lo-Alarm signal lights or horns. For a 24-hour record of boiler water levels, use the Yarway Hi-Lo-Graph Recorder.

On the boiler drum itself you'll want Yarway Water Gages . . . and these "bright as a star" gage readings can now be televised with a Yarway—RCA Television chain.

From drum to panel and at all remote locations, Yarway equipment gives you the safest boiler protection you can buy . . . proved beyond doubt in thousands of power plants.

Write for the specific bulletins you want.

YARNALL-WARING COMPANY

Home Office:

116 Mermaid Avenue, Philadelphia 18, Pa.

Southern Representative:

ROGER A. MARTIN, Bona Allen Building, Atlanta 3, Ga.

YARWAY®

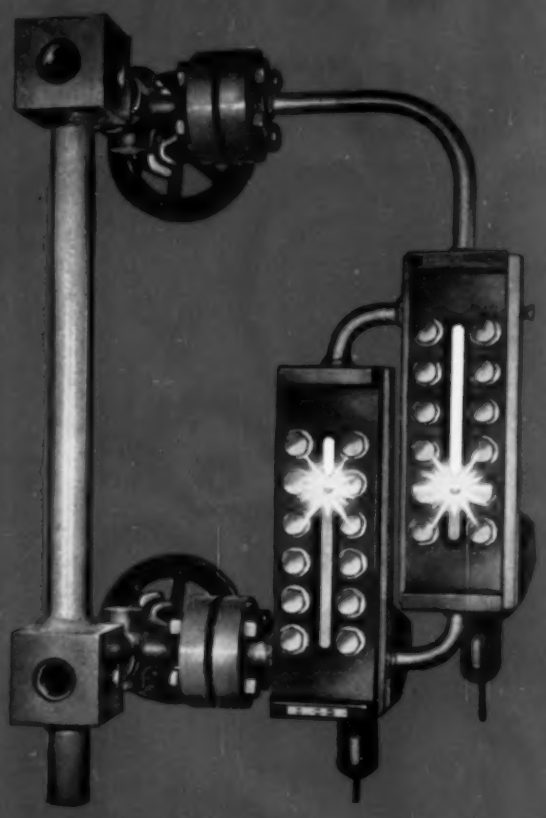
WIDE VISION!

Clear, brilliant readings from any angle, are possible with the "wide vision" face on the Yarway Remote Liquid Level Indicator. Pointer is always visible, even at extreme high and low water levels.

The Yarway Indicator is manometric type with automatic temperature compensation, as approved for use under the ruling of A.S.M.E. Boiler Code Committee in Case # 1155.

Described in Yarway Bulletin WG-1824.

good boiler insurance!"



YARWAY WATER GAGES

Flat glass, high pressure type shown, features new separated-design insert and Type "M" illumination that causes water level meniscus to "shine like a star". Described in Yarway Bulletin WG-1812.

YARWAY REMOTE SIGNAL ALARMS

Lights on horns, operated by Control Unit on Yarway Indicator, give instant warning of any serious deviation from normal water level. Can be located anywhere in plant. Described in Yarway Bulletin WG-1824.

YARWAY HI-LO-GRAPH RECORDER

Gives a continuous 24-hour record of liquid levels. Actuating mechanism is same as in Yarway Indicator. Used both for indicating and recording. Described in Yarway Bulletin WG-1830.

YARWAY RCH TELEVISION

Simplified system consists of compact camera and panel-mounted monitor. Clear, bright image of water level gage anywhere in the plant.
Described in Yarway Bulletin WG-1813.

steam plant equipment

Blow-Off Valves	Steam Traps
Water Columns and Gages	Strainers
Liquid Level Indicators	Spray Nozzles
Expansion Joints	Digester Valves

NOW

BROWN BOVERI *NON-REGENERATIVE CYCLE* GAS TURBINES

with 25% FIELD-TESTED EFFICIENCY

A 25,000 kW Brown Boveri Gas Turbine installed for Societa Selt Valdarno at Livorno, Italy, for peak load service using Bunker C oil. Proven tested efficiency of 25%. Non-regenerative cycle. Operating temperature on the gas side, 1200°F. insuring long life and low maintenance. Another identical unit goes into operation in May 1956.

WITH a proven-in-actual-operation efficiency of 25%, Brown Boveri Non-Regenerative Cycle Gas Turbines are setting new standards for performance and economy. This operating experience with large turbines — even those fired with low-grade gas or oil — can be found only in Brown Boveri Gas Turbines.

In first costs, these turbines show marked savings. They cost substantially less than comparable conventional steam turbine plants.

If you are concerned with large output gas turbines, it will pay you to investigate Brown Boveri equipment.

Other Recent Orders for identical 25,000 kW Brown Boveri Non-Regenerative Cycle GAS TURBINES

- **Societa Romana di Electtricita for Roma 1 (Italy) Power Station**
- **Gullspong Munksfors Kraft AB Oerebro for Otterbacken Power Station**
- **City of Edmonton, Canada, Power Plant, 2 units**
- **City of Vancouver, Canada, Power Plant, 3 units**
- **City of Jearcan, Canada, Power Plant, 1 unit**

BROWN BOVERI

BROWN BOVERI CORPORATION

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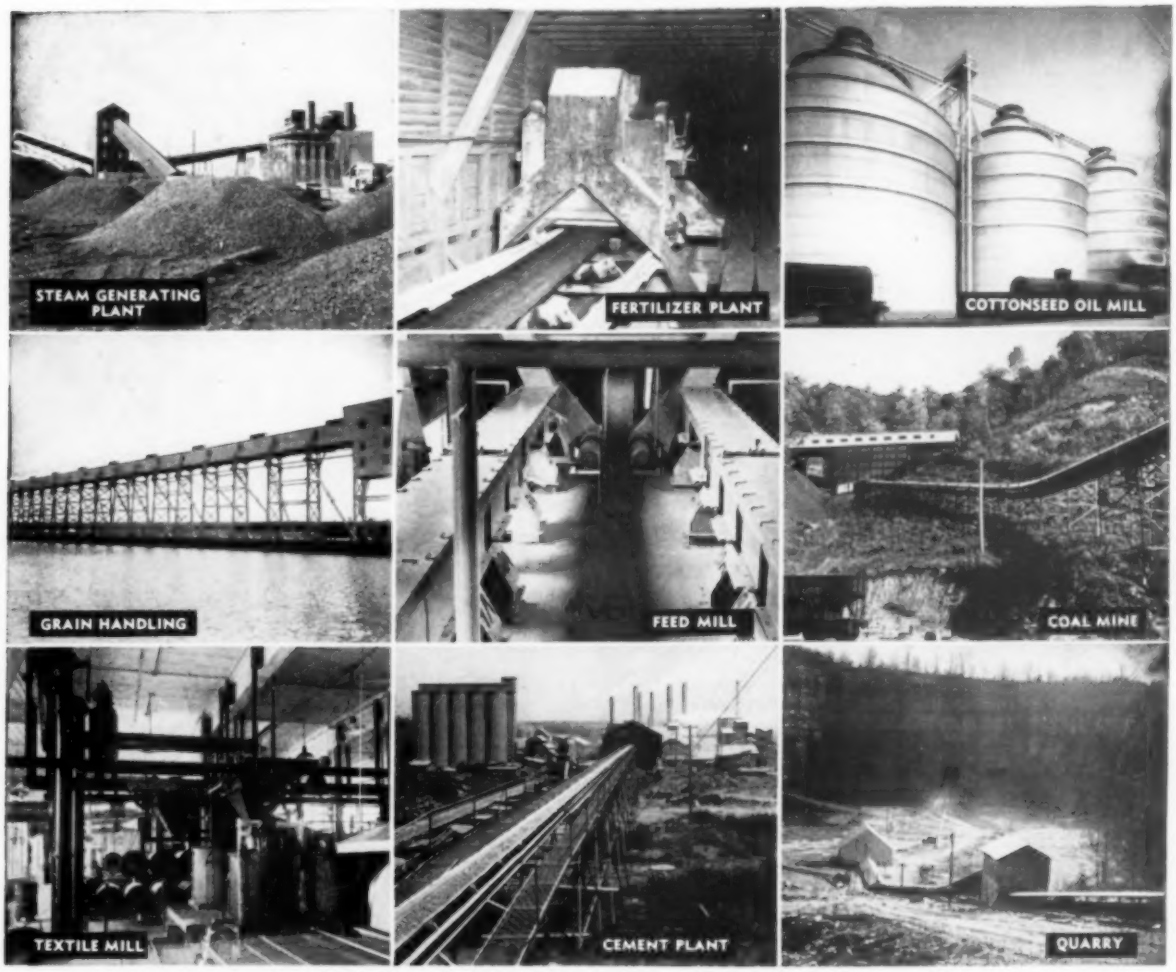
MATERIALS HANDLING!

There's a Continental Conveyor for every industry.

When you have a conveying or elevating problem — — specify *Continental*



BELT CONVEYORS, SCREW CONVEYORS, APRON CONVEYORS, BUCKET ELEVATORS
PLATE OR APRON FEEDERS, TRIPPERS, BELT BRUSHES, PULLEYS, SPROCKETS AND CHAIN
PILLOW BLOCKS, BELTING, SPEED REDUCERS, POWER TRANSMISSION EQUIPMENT
FABRICATED STEEL, MEEHANITE CASTINGS, SPECIAL MACHINE WORK

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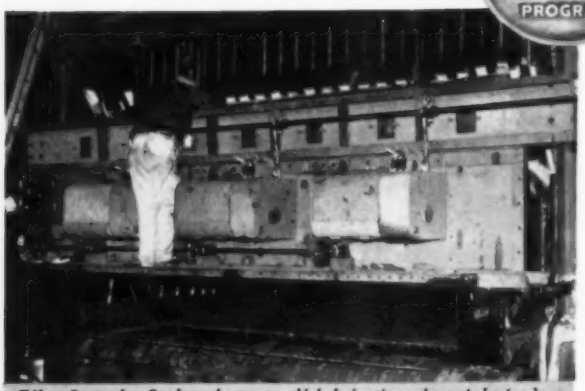
CG-5003

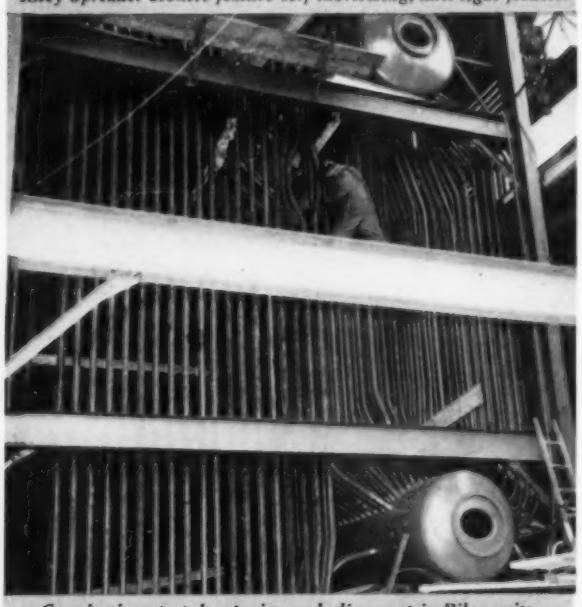
INDUSTRIAL DIVISION
CONTINENTAL GIN COMPANY
BIRMINGHAM, ALABAMA

ENGINEERS CGC **ATLANTA • CLEVELAND • DALLAS • KNOXVILLE** CGC **MANUFACTURERS**
MEMPHIS • NEW YORK 17, NEW YORK

another POWER MODERNIZATION CITATION WINNER .



Riley Spreader Stokers feature self lubricating, dust-tight feeders.



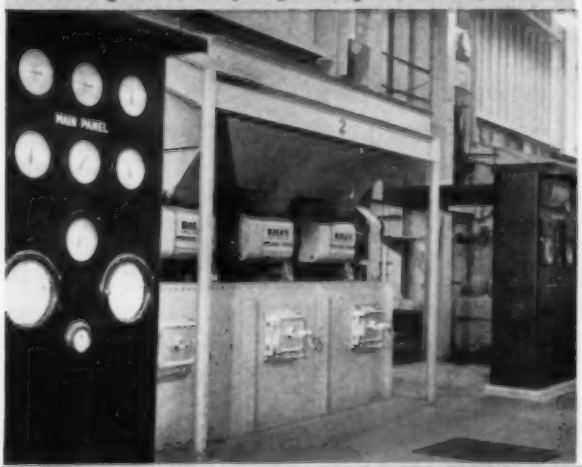
Care is given to tube spacing and alignment in Riley units.

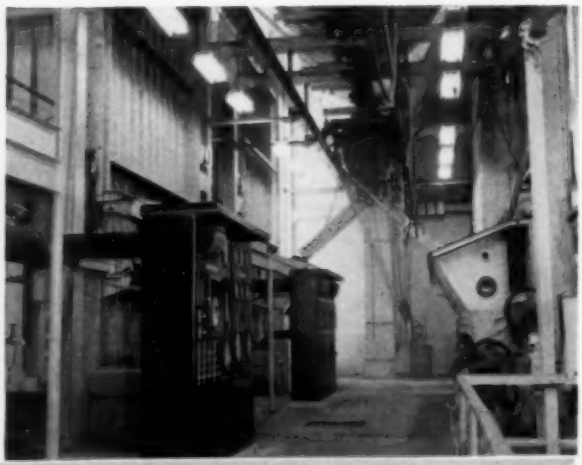
at its Bendix Products Division
South Bend, Indiana

Bendix
AVIATION CORPORATION

replaced two old boilers with two modern RILEY stoker fired units to:

- cut fuel costs 19% per 1000 lbs. of steam
- boost efficiency from 70% to 82%
- lower maintenance costs 80%
- up availability from 50% to 96%





Two views of the Bendix firing aisle show Riley Traveling Grate Hydraulic Drives and overhead coal conveyor system.

SINCE installing two 80,000 lb/hr. Spreader Stoker fired Riley units, savings to Bendix Products Division at South Bend, Indiana in coal consumption have amounted to many thousands of dollars per year, enough to pay for the modernization within a comparatively short time. This added to savings in production due to increased availability, and savings resulting from an 80% decrease in cost of maintenance means still shorter write-off time of investment . . . and with Riley equipment an assurance of many years of dependable, low cost operation.

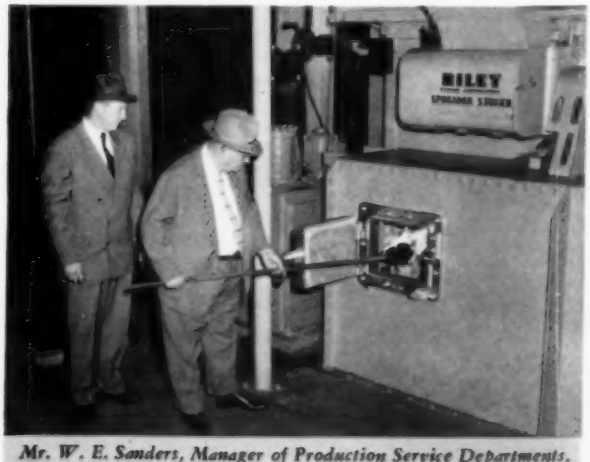
Nature of the Bendix Modernization Program

- Replace two 511 H. P. Boilers with two 80,000 lb/hr. Riley Units fired by Riley Traveling Grate Spreader Stokers.
- Revamp building to accommodate boilers and coal handling equipment.
- Install 500 ton overhead bunker and coal elevator-conveyor system.
- Increase capacity of water softener, filter, boiler feedpumps and air system.
- Install new steam headers, coal unloading shelter and ash washer.

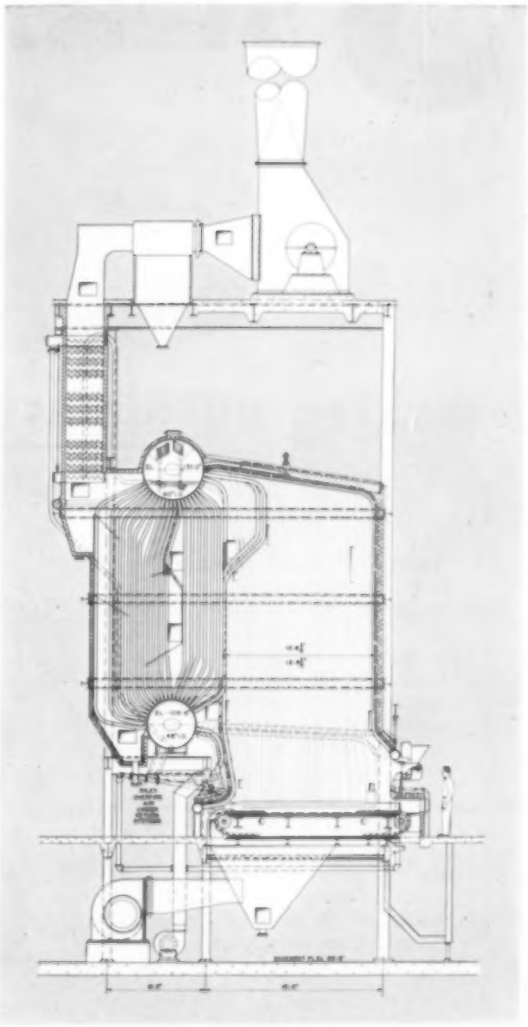
Problems Solved to Maintain Operation During Modernization

- Demolish tall brick stack.
- Support of roof of building while removing building columns.
- Excavate and form new footings under walls for coal bunker.
- Pour new foundations for boilers

Bendix is to be congratulated for its 1955 POWER MODERNIZATION AWARD winning program. Of the twelve winners in this contest Riley equipment was featured by five companies: Bendix, Pennsylvania Railroad, Garlock Packing Co., Carbide and Carbon Chemicals Co., and The Flintkote Company.



Mr. W. E. Sanders, Manager of Production Service Departments, lights off with Paul E. Rudbeck, Power Plant Superintendent.



Two Riley Traveling Grate Spreader Stoker Fired Units, capacity 80,000 lbs/hr; 160 psig design, saturated; Riley Continuous Tube Economizer.

A survey of your plant by a consulting engineer could show ways of making surprising savings in your power costs.

RILEY
Stoker Corporation
WORCESTER, MASSACHUSETTS

Sales Offices: Worcester, New York, Philadelphia, Buffalo, Pittsburgh, Cleveland, Detroit, Chicago, Cincinnati, Charlotte, New Orleans, Atlanta, St. Louis, Kansas City, St. Paul, Houston, Denver (Englewood), Salt Lake City, Los Angeles, San Francisco, Portland, Seattle.

5 STEPS

in making an almost indestructible turbine

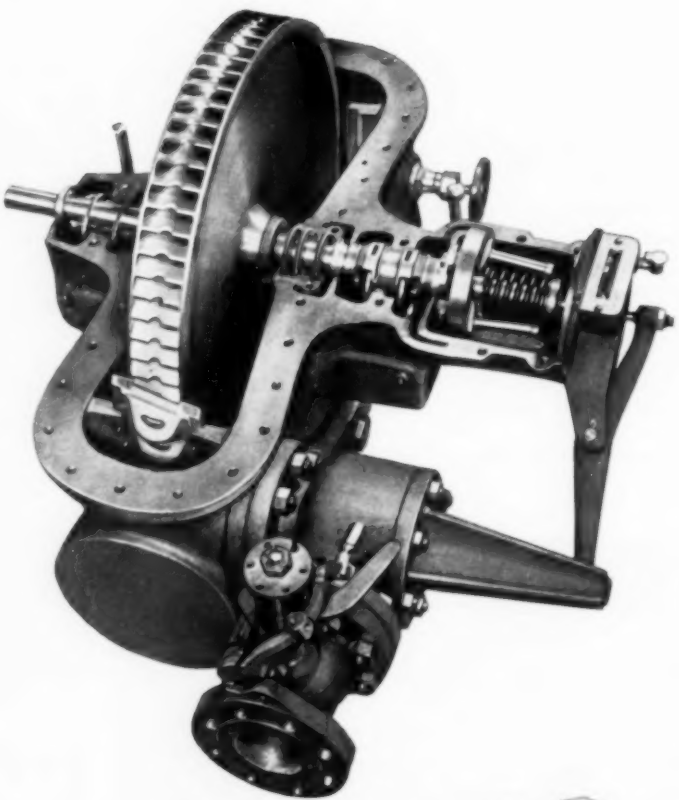
The rotor of a Terry solid-wheel turbine is a single forging of special composition steel. It is first rough turned in two operations, as shown, and then two cuts are taken to mill the semi-circular buckets from the solid metal. The wheel at the top has been finished, ready for mounting on the shaft. *The result is a single-piece wheel with no parts to loosen or wear out.*

Blade wear, which might occur after many years of usage, is not important, because the power-producing action of the steam takes place on the curved surfaces at the backs of the buckets. Thus wear does not materially affect horsepower or efficiency.

The blades can't foul. They have a one-inch clearance, and are further protected by the projecting rims at the sides of the wheel.

The Terry solid-wheel turbine is an extremely reliable piece of equipment. Write for details—today. Ask for a copy of bulletin S-116.

THE
TERRY STEAM TURBINE CO.
TERRY SQUARE, HARTFORD 1, CONN.



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TT-1204

STAINLESS STEEL*

TO MARK PROGRESS

FITTINGS 1/8" THROUGH 36"

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...FOR COMPLETE SERVICE IN *Controlled Quality* FITTINGS

When you need service in stainless and alloy fittings... regardless of material specification, size, type, or wall thickness... you can depend on the Ladish Controlled Quality line and the services of your Ladish Stainless Distributor for complete satisfaction.

IPS WELDING FITTINGS		½" through 36" From Sch. 5S to wall thicknesses through 4"
O.D. TUBING FITTINGS		1" through 36" From .049" wall to .250" wall
MSS AND ASA FLANGES		1" through 24" 150 lb. through 2500 lb.
150 LB. SCREWED FITTINGS		⅛" through 4"
FORGED SCREWED AND SOCKET FITTINGS, UNIONS		⅛" through 4" 2000 lb. through 6000 lb.

THE COMPLETE *Controlled Quality* FITTINGS LINE

LADISH CO.

CUDAHY, WISCONSIN
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District Offices: New York • Buffalo • Pittsburgh • Philadelphia • Cleveland
Chicago • St. Paul • St. Louis • Atlanta • Houston • Odessa • Tulsa • Denver
Los Angeles • San Francisco • Seattle • Havana • Mexico City • Brantford, Ont.

*Also furnished in any forgeable material specification including... Titanium, Aluminum, Copper, Nickel, and Chromium Base Alloys.

When Nature finds the formula...

she sticks to it!

Having made a green pea just as she wanted it, Old Mother Nature saw no reason to change the blueprints.

The remarkable uniformity of Fuel Satisfaction's* quality is close to the uniformity of peas.

Fuel Satisfaction includes many types of fuels, high and low volatile, each with its own application in industrial fields. No matter which of these fuels meets your specific requirements, you can buy *any* of them with the assurance that Mother Nature has been consistent; and coupled with modern preparation facilities, the fuel's chemical properties and high-grade quality are just as uniform as "two peas in a pod."

Let us tell you about the types of Fuel Satisfaction you can utilize best. The N&W maintains eight coal bureaus, staffed with men who know coal and its use. Their service is yours without obligation. Call on them—any time.

*The superior all-purpose Bituminous Coal mined along the N&W.

Norfolk and Western
RAILWAY

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Boston 10, Massachusetts

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Room 604
208 South LaSalle Street
Telephone RAndolph 6-4634
Chicago 4, Illinois

CINCINNATI
913 Dixie Terminal Building
Telephone DUnbar 1-1325
Cincinnati 2, Ohio

CLEVELAND
1819 Union Commerce Building
Telephone MAin 1-7960
Cleveland 14, Ohio

DETROIT
1907 Book Building
Telephone WOodward 1-2340 or 1-2341
Detroit 26, Michigan

ST. LOUIS
2059 Railway Exchange Building
Telephone MAin 1-1180
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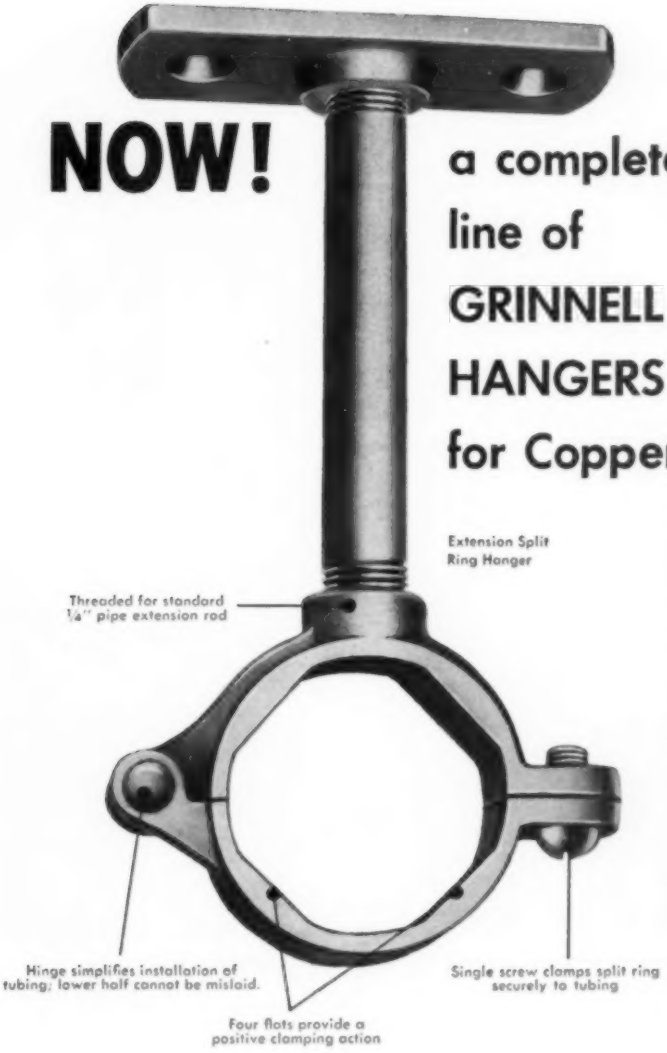
WINSTON-SALEM
1105 Reynolds Building
Telephone 7116
Winston-Salem 1, North Carolina

NOW! a complete line of GRINNELL HANGERS for Copper Tubing


Extension Split Ring Hanger
Threaded for standard ¼" pipe extension rod
Hinge simplifies installation of tubing; lower half cannot be mislaid.
Four flats provide a positive clamping action
Single screw clamps split ring securely to tubing

Adj. Wrought Clevis Hanger with Threaded Rod and C-Clamp

Adj. Wrought Ring Hanger

Split-Ring with Socket and Coach Screw

Adj. Wrought Band Hanger

Grinnell now offers, in one *complete* line, every standard type of hanger and support for copper tubing. All are heavily copper plated for long, rugged wear. All are accurately sized to fit standard copper tubing, and designed to give a neater installation wherever copper tubing is used.

For dependability, speed, and convenience . . . let Grinnell's coast-to-coast network of warehouses and jobbers serve you as a one-stop source for all your copper tubing hanger requirements. Grinnell-trained personnel are ready to work with you "on-the-job", anywhere, to help solve any problem connected with hangers and supports for copper tubing.

Whether it be for copper tubing or standard pipe, specify Grinnell hangers. No other company makes as complete a line; provides as thorough a distribution service; or can cooperate as fully on *all* your piping assignments.

Write for your copy of the COPPER TUBING HANGER Catalog. Grinnell Company, Inc., 224 West Exchange St., Providence, Rhode Island.

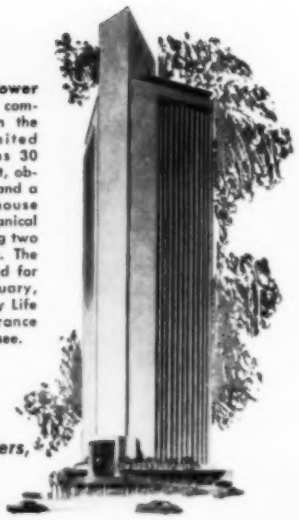
GRINNELL

AMERICA'S #1 SUPPLIER OF PIPE HANGERS AND SUPPLIES

Grinnell Company, Inc., Providence, Rhode Island • Coast-to-Coast Network of Branch Warehouses and Distributors

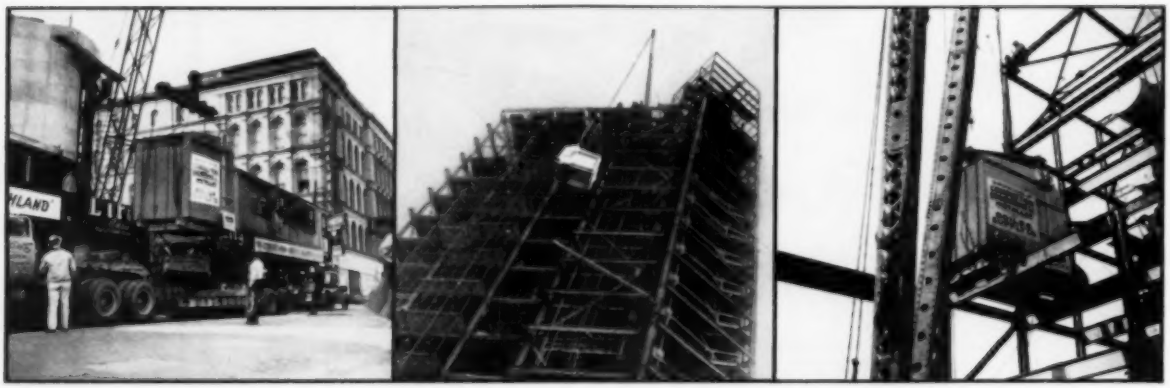
pipe and tube fittings • welding fittings • engineered pipe hangers and supports • Thermolier unit heaters • valves
Grinnell-Saunders diaphragm valves • pipe • prefabricated piping • plumbing and heating specialties • water works supplies
industrial supplies • Grinnell automatic sprinkler fire protection systems • Amco air conditioning systems

You can put a VP boiler ANYWHERE!



Life and Casualty Tower will be the tallest commercial structure in the southeastern United States. It contains 30 floors plus basement, observation platform and a three-story penthouse containing the mechanical equipment—including two VP package boilers. The building is scheduled for occupancy in January, 1957. It is owned by Life and Casualty Insurance Company of Tennessee.

. . . anywhere the floor-loading's adequate, of course. In Nashville's nearly-finished Life and Casualty Tower, two Combustion Engineering Package Boilers, Type VP, were installed in a 32nd-floor penthouse — nearly 400 feet above the street. The pictures show how the job was done.



Take It Away—First of two VP Boilers—27,000 pounds—clears the truck bed in the first step of its 32-story journey. VP Boilers come fully assembled, ready for water, rail or road shipment anywhere in the world.

Almost Home—This VP has probably shattered the altitude record for boilers now—and it has another 30 or 40 feet yet to go. That's one of the advantages of the VP. You pick the spot and the rigging boys will find a way to move it in.

Boiler in a Penthouse—Now it's almost settled in its permanent skytop home; about set to bring up number 2. When the floor is ready, they'll hook up fuel, water and the job's done. They'll burn gas in these boilers, with oil as stand-by.

The completely shop-assembled VP Boiler, shown at left, is available in fourteen sizes from 4,000 to 40,000 lb steam per hr ... for operating pressures up to 500 psi ... for pressure firing of liquid or gaseous fuels. The VP Boiler has more water-cooled area per cubic foot of furnace volume than any other boiler of its size and type. The larger lower drum—30-inch diameter—permits a simple, symmetrical tube arrangement...greater water storage capacity ... easy access for washing down or inspection. A low speed centrifugal fan which is exceptionally quiet in operation is standard equipment. The simple baffle arrangement results in low draft loss...simple soot blowing...no dead pockets ... high heat absorption. The VP is enclosed in a reinforced, gas-tight, welded steel casing, and shipped completely assembled with firing equipment, fittings and forced draft fan. For foundation, the VP Boiler requires only a simple concrete slab.

C-E **COMBUSTION ENGINEERING**

B-928A

Combustion Engineering Building • 200 Madison Avenue, New York 16, N.Y.
Canada: Combustion Engineering-Superheater Ltd.

Steam Generating Units • Nuclear Reactors • Paper Mill Equipment • Pulverizers • Flash Drying Systems • Pressure Vessels • Home Heating and Cooling Units • Domestic Water Heaters • Soil Pipe

ANDERSON'S WATER CONTROL SERVICE

. . . protects you against scale and corrosion

Corrosion and scale take a terrible toll in maintenance and repairs on boilers, steam lines and air conditioning systems. But not in those plants who engage the services of Anderson's water control engineers. These highly-trained men have encountered and whipped every conceivable scale and corrosion problem to be found in the south. They are equipped to analyze your water on the spot and have the complete facilities of the Anderson laboratories at their disposal. So when you call in the Anderson man, you're sure of an accurate diagnosis and an effective prevention or cure of your water troubles.

You may think you have no water problems, but if you use water, you will have. Everybody does. So head off trouble and needless expense *now*. Write us for full details about Anderson's complete water control engineering service. You'll be glad you did. No obligation, of course.

SPECIALISTS IN MAKING WATER BEHAVE

Anderson Chemical Company, INC.

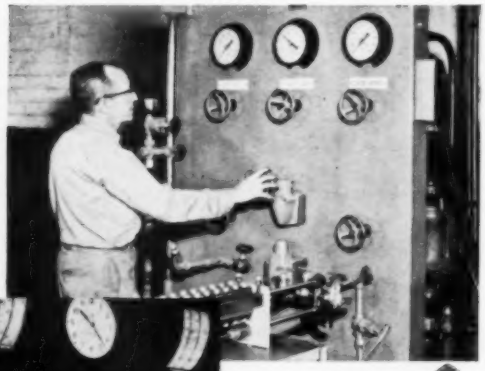
Box 1424 • MACON, GEORGIA • Phone: 5-0466

Sharp visibility for *all* your liquid levels with EYE-HYE Remote Reading Gage

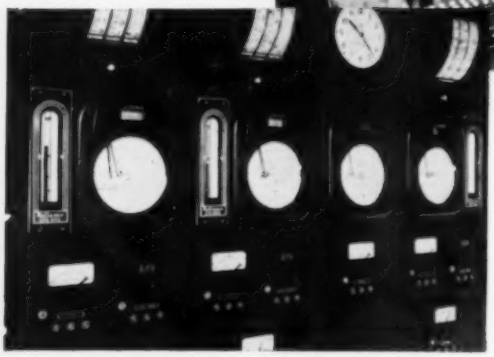
Most important for quick-reading mistake-proof gage equipment are your main boilers — naturally! But other liquid levels need watching — some that can't have "main floor" prominence or convenience.

EYE-HYE brings *all* gage reading out front, to a central point or to locations frequently passed by operators. (See list below.)

Simple, fool-proof, easy to read (illuminated green liquid represents water level), EYE-HYE is made for pressures up to 2500 psi — water level variation to 12 feet. New wide vision face plate makes reading visible from wide area. Write for specific recommendations to bring your gage facilities up to date.



Close-up of panel board section at an important research center where 3 EYE-HYEs serve the main boilers.



How EYE-HYE assemblies get hydraulic test at nearly twice their cataloged pressure rating.

Main boilers **Flash tanks**
Feed Water Heaters
Water treatment systems
Waste heat boilers
Storage tanks

The Reliance Gauge Column Co., 5902 Carnegie Ave., Cleveland 3, Ohio

News (Continued)

(*Starts on Page* 8)

had justified the cost, which was $30,000.

Electrically powered equipment for efficient **automation** will be offered in a compact, variable speed drive having wide range and fine regulation. At the same display will be shown a motor-generator set with ac and dc controls, mounted in a pressurized, self-ventilating steel cabinet.

In the field of **materials** there will be, among other exhibits, new varieties in clad steels and many new special purpose alloys, self-lubricating bearings and powder metal parts, metalizing equipment, metal cutting tools, spring coilers and torque testers, welding rods and equipment, protective coatings.

A well-known manufacturer of centrifugal castings will exhibit for the first time **ductile iron** and ductile Ni-Resist in **centrifugal cast form.**

A new **line of duct** is composed of fiberglass impregnated with neoprene or silicone, and reinforced with wire. It is capable of withstanding temperatures from —65 to +600F. Produced in a range of 1 in. to 12 in. I D, it is widely used in aircraft applications, as well as industrial uses.

An entirely **new expansion joint** has been designed to eliminate the use of highly stressed, thin-wall corrugated bellows in piping systems. It accommodates traverse expansion and misalignment and is valued as a safeguard against damage where piping is subject to vibration and shock, or where settling or earthquake hazards are anticipated.

Termed the first **hydraulic bolt tentioner,** providing the fastest method for securing uniform pressure control on gaskets, will also be exhibited for the first time.

Water saving in industrial cooling, with temperature controlled to within 2 deg F, is offered in the new Panel Casing Aero Heat Exchanger, an evaporation apparatus which maintains the required thermal level by the modulated use of outdoor air. The system is available in four capacities — 7,000,000 to 18,000,000 Btu/hr — and is designed for convenient outdoor ground or roof location adjacent to the point of distribution. Among the many

(*Continued on Page* 48)

YOU CONSERVE POWER INCREASE EFFICIENCY REDUCE MAINTENANCE

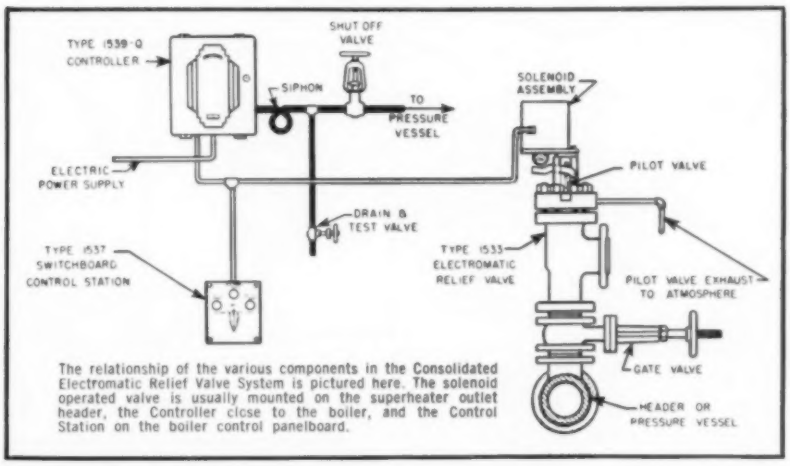
WITH THE CONSOLIDATED "ELECTROMATIC" RELIEF VALVE

The ideal auxiliary valve for steam generating plants with pressures to 2500 psi and temperatures to 1100° F., the Consolidated Electromatic Relief Valve relieves pressures precisely within close limits with "quick as a wink" cyclic action. It's an automatic, electrically actuated valve that can be accurately set for a differential of 1% or less between the opening and closing pressures.

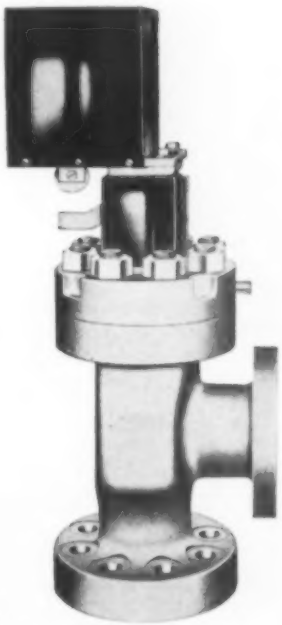
Operated by a solenoid actuated by a control station mounted in the panelboard, merely setting the switch provides automatic or manual service or cuts the valve out of operation. High superheat temperatures or other variables do not affect valve operation. A constant pressure output is maintained on the superheaters.

The Electromatic is also used to purge superheaters during start-up or as a superheater surge vent valve to reduce substantially the possibility of damage to equipment.

Wherever the Electromatic supplements spring-loaded safety valves, power is conserved, the efficiency of steam generating equipment is increased and maintenance is reduced. The Consolidated Electromatic Relief Valve is available in these sizes: 2½", 4", 10" and 14". Get complete specifications and operational details. Send for Bulletin 720.



The relationship of the various components in the Consolidated Electromatic Relief Valve System is pictured here. The solenoid operated valve is usually mounted on the superheater outlet header, the Controller close to the boiler, and the Control Station on the boiler control panelboard.



In Canada: Manning, Maxwell & Moore of Canada, Ltd., Galt, Ontario.

CONSOLIDATED SAFETY VALVES

A product of **MANNING, MAXWELL & MOORE, INC.** STRATFORD, CONN.

MAKERS OF 'AMERICAN' INDUSTRIAL INSTRUMENTS, 'ASHCROFT' GAUGES, CONSOLIDATED SAFETY VALVES, 'AMERICAN-MICROSEN' INDUSTRIAL ELECTRONIC INSTRUMENTS, *Stratford, Conn.* 'HANCOCK' VALVES, *Watertown, Mass.* 'CONSOLIDATED' SAFETY RELIEF VALVES, *Tulsa, Okla.* AIRCRAFT CONTROL PRODUCTS, *Danbury & Stratford, Conn. and Inglewood, Calif.* "SHAW-BOX" AND 'LOAD LIFTER' CRANES, 'BUDGIT' AND 'LOAD LIFTER' HOISTS AND OTHER LIFTING SPECIALTIES, *Muskegon, Mich.*

KEEP IT CLEAN...

by Phil Tration

Model CPH
Pipe Line Filter

The uses for Dollinger Filters are truly "elephantine" . . . any liquid, gas, or air can be efficiently and economically handled by them.

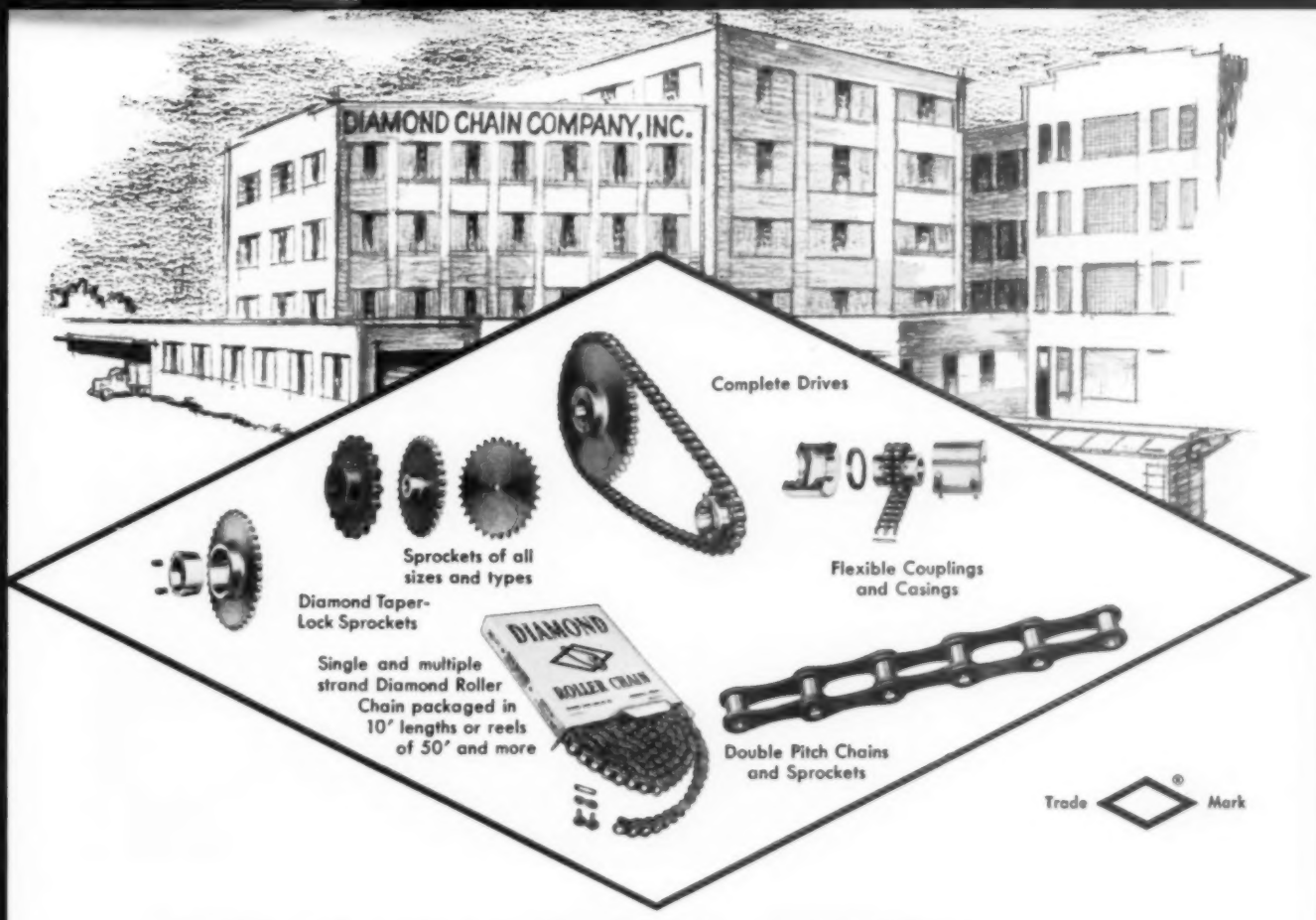
Nearly all air-operated tools, instruments, controls, and industrial processes, must be protected from destructive dirt, dust, pipe scale, and condensates . . . and nothing does this job better than a Dollinger Pipe Line Filter.

Model CPH Pipe Line Filter, illustrated at the right, has the exclusive "double action principle." Air is first deflected to outer walls of Filter and forced downward at high speed. Water, oil, and heavier particles of rust, etc. are thus deposited in base. Mechanically cleaned air then rises to pass through filtering medium which removes lighter air-borne particles. This "double action" design eliminates need for frequent cleaning.

Why not talk over your filtration problems with a Dollinger engineer . . . or write for bulletin 200 which gives engineering data on pipe line filters. Dollinger Corporation, 40 Centre Park, Rochester 3, N. Y.

DOLLINGER
STAYNEW FILTERS

LIQUID FILTERS • PIPE LINE FILTERS • INTAKE FILTERS • HYDRAULIC FILTERS
ELECTROSTATIC FILTERS • DRY PANEL FILTERS • SPECIAL DESIGN FILTERS
VISCOUS PANEL FILTERS • LOW PRESSURE FILTERS • HIGH PRESSURE FILTERS
AUTOMATIC VENTILATION FILTERS • NATURAL GAS FILTERS • SILENCER FILTERS


DIAMOND CHAIN COMPANY, INC.
Complete Drives
Sprockets of all sizes and types
Diamond Taper-Lock Sprockets
Flexible Couplings and Casings
Single and multiple strand Diamond Roller Chain packaged in 10′ lengths or reels of 50′ and more
DIAMOND
ROLLER CHAIN
Double Pitch Chains and Sprockets
Trade ® Mark

YOUR DIAMOND INDUSTRIAL DISTRIBUTOR BRINGS OUR PLANT, PRODUCTS AND SERVICES

to YOUR door!

Trained in factory methods, your Diamond Distributor brings you ready knowledge on roller chain installations. He has, at his elbow, the engineering data required for almost every application.

His stocks eliminate your excessive inventory—free cash for other uses. Being a local business man his fast service and personal interest in your problems save time, save you money, make purchases easy.

Your Diamond Distributor is part of your supply team. He brings highest quality Diamond Roller Chains and Diamond *Service* to your door. Telephone today. His number is in the yellow pages of your telephone directory under the heading, Chains or Chains-Roller.

A LOCAL PHONE CALL brings your Diamond Distributor immediately—a man who knows his products—a man whose *business* is to procure for you as little or as much product as you need when you need it.

DIAMOND CHAIN COMPANY, Inc.

Where High Quality is Traditional

Dept. 612, 402 Kentucky Avenue, Indianapolis 7, Indiana

Offices and Distributors in All Principal Cities

DIAMOND ROLLER CHAINS

FACT: The new Life-Line A is the most corrosion-resistant motor on the market

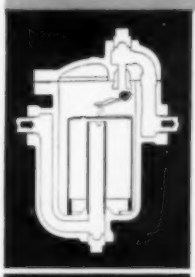
The new Westinghouse Life-Line® "A" motor offers more protection against corrosive atmospheres than any other motor you can buy. How?

Because its combined improvements in insulation, housing and bearing design give unsurpassed protection against any contamination. It takes the right combination of such improvements in *all three systems*—electrical, mechanical and lubrication—to make the Life-Line "A" industry's most preferred "power package".

Get all the facts from your Westinghouse sales engineer—*The Man With The Facts.* J-21900

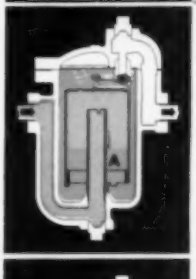
YOU CAN BE SURE... IF IT'S
Westinghouse

How Armstrong Trap Design Improves Plant Efficiency . . .

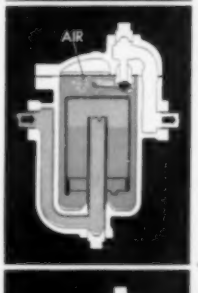


1 When trap is first installed, the inverted bucket is down and the valve is wide open. The large clearance between valve and seat minimizes restriction to condensate flow, contributing to large capacity.

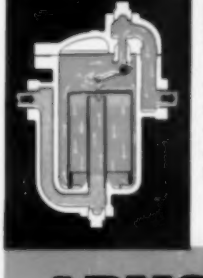
2 When steam is turned on, note how condensate (solid color) flows down between bucket and trap body, then up and out through orifice. Dirt is held in suspension and washed out when valve opens.



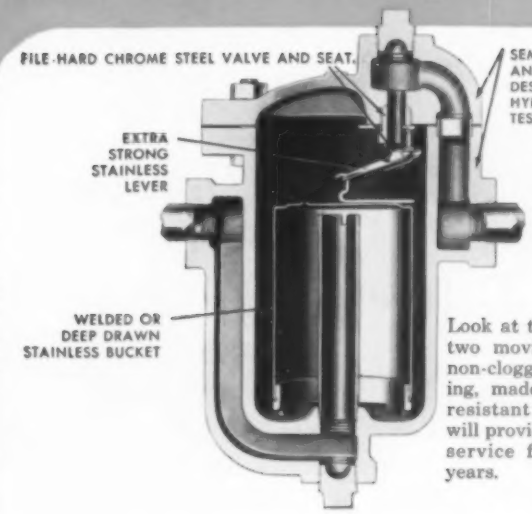
3 When steam reaching trap displaces less than ⅓ of the water in the bucket, it floats, closing the valve. Generous safety margin (dimension A) insures that steam will never reach trap orifice.



4 When more condensate enters trap, the bucket loses buoyancy and pulls on valve lever. (Note how incoming air passes through bucket vent and collects at top of trap, awaiting discharge.)



5 When weight of bucket times leverage overcomes pressure on valve, trap opens, creating momentary pressure drop that "pumps" condensate and non-condensibles from unit being drained.


FILE-HARD CHROME STEEL VALVE AND SEAT.
SEMI-STEEL BODY AND CAP. 250 LBS. DESIGN PRESSURE—HYDROSTATIC TESTED AT 500 LBS.
EXTRA STRONG STAINLESS LEVER
WELDED OR DEEP DRAWN STAINLESS BUCKET

Look at this trap. Only two moving parts. It's non-clogging, non-sticking, made of corrosion resistant materials. It will provide trouble-free service for years and years.

Time-Tested Inverted Bucket Principle Provides Five Cost-Reducing Benefits:

The modern Armstrong Trap is unsurpassed in these five major contributions to plant operating efficiency:

1. Fast heat-up—thanks to large condensate and air handling capacity. On batch or cycled production, you get maximum output per day.

2. High heat transfer rate—quick opening creates a sudden surge of condensate and air from the unit being drained. This pumping action prevents stratification of incondensibles and insures complete drainage. Laboratory and field tests prove it produces higher heat transfer than is otherwise possible.

3. Low Fuel Consumption—non-productive radiation losses are minimized because condensate is discharged at steam temperature as fast as it accumulates in the trap—you get more production per hour and per unit of fuel. And, there is no steam loss through the trap orifice.

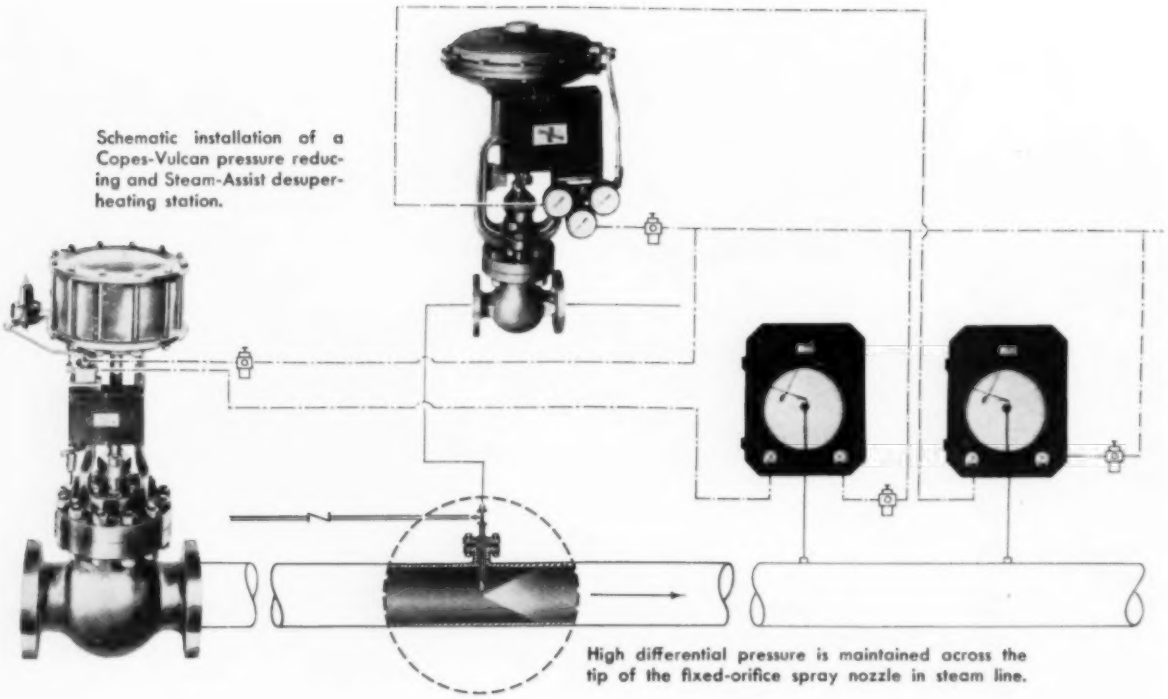
4. Continuity of operation—the trap always opens for condensate; the simple, sturdy, self-cleaning mechanism insures continuous operation between inspections without interruption of processing.

5. Low Maintenance—no trap has ever gained so enviable a record for trouble-free service—ask anyone who has kept records.

Free: Steam Trap Book—
44 helpful pages on trap selection, installation maintenance, physical data and prices. Call your local Armstrong Representative or Distributor, or write:

ARMSTRONG MACHINE WORKS
806 Maple Street • Three Rivers, Michigan

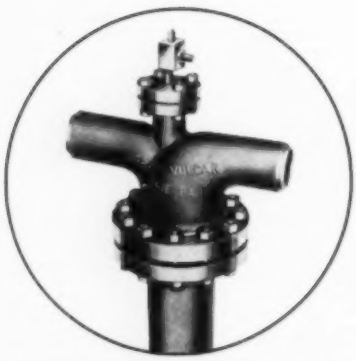
ARMSTRONG *Inverted Bucket* **STEAM TRAPS**



Schematic installation of a Copes-Vulcan pressure reducing and Steam-Assist desuperheating station.

High differential pressure is maintained across the tip of the fixed-orifice spray nozzle in steam line.

NEW Copes-Vulcan Pressure Reducing and Desuperheating Stations



Copes-Vulcan offers in-line or carburetor type Steam-Assist, or simple mechanical-atomizing desuperheaters.

Represented in Canada by: Peacock Brothers Limited, Montreal, Sydney, Toronto, Calgary, Edmonton; W. W. Hicks & Co., Winnipeg.

These high-quality pressure reducing and desuperheating stations offer the latest advances in reducing valves and desuperheaters. They give you an integrated station designed specifically to meet your operating needs.

Copes-Vulcan valves—diaphragm or piston operated, depending on your conditions—give close modulating control. Simplified design means optimum operating characteristics with easy, low-cost maintenance.

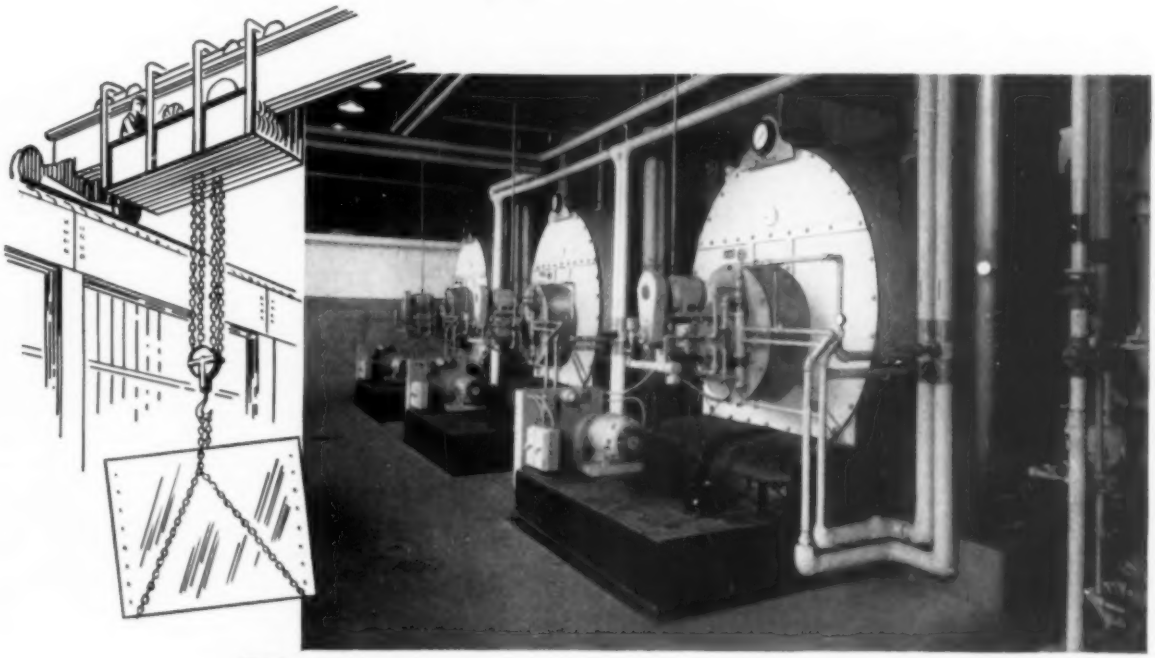
The Steam-Assist Desuperheater advances a new principle in reducing steam temperatures. Cooling water and assisting steam are mixed in the exclusive swirl chamber, upstream from the point of injection. No large steam bubbles form to cause hammer or vibration. Flow of assisting steam can be automatically reduced as load increases, and shut off completely at high loads where no more than mechanical atomization is needed.

"Packaged" control systems by Copes-Vulcan mean undivided responsibility, custom design and lifetime engineering service. They assure top performance over an unusually long service life.

COPES-VULCAN DIVISION
BLAW-KNOX COMPANY
Erie 4, Pennsylvania

50th Anniversary
BLAW-KNOX
1906-1956

from Steel Plate to Steam Production



only SUPERIOR *takes all these steps to insure Satisfaction . . .*

HEAVY DUTY DESIGN

Bigger, heavier and more ruggedly designed, Superior Steam Generators are integrated engineered so that all components are matched in size and function to one another.

CODE CONSTRUCTION

5 sq. ft. of heating surface per b.h.p. . . . induced down-draft design . . . sized to capacity boiler shells . . . for longer life at high efficiency.

FACTORY FIRE TESTED

Completely fire tested before shipment . . . adjusted to peak performance, and guaranteed on the basis of these actual tests.

SHIPPED COMPLETE

Set it on any floor capable of supporting its weight; tie into fuel, steam and electric lines, and you are ready to start producing steam . . . efficiently and economically.

STARTED ON THE JOB BY FACTORY TRAINED EXPERTS

Superior responsibility ships with the boiler in the form of a factory trained expert, on hand to start the boiler, to adjust it on the job to peak performance, and to instruct operating personnel.

Because Superior Steam Generators are complete packages, designed, engineered and built by Superior Combustion Industries, Inc., they are backed by undivided responsibility . . . responsibility that goes beyond manufacture, and includes factory fire testing before shipment, and factory trained personnel at the installation point to start the boiler initially, adjust it to peak performance, and to advise the operating engineer on how to get the most out of the unit.

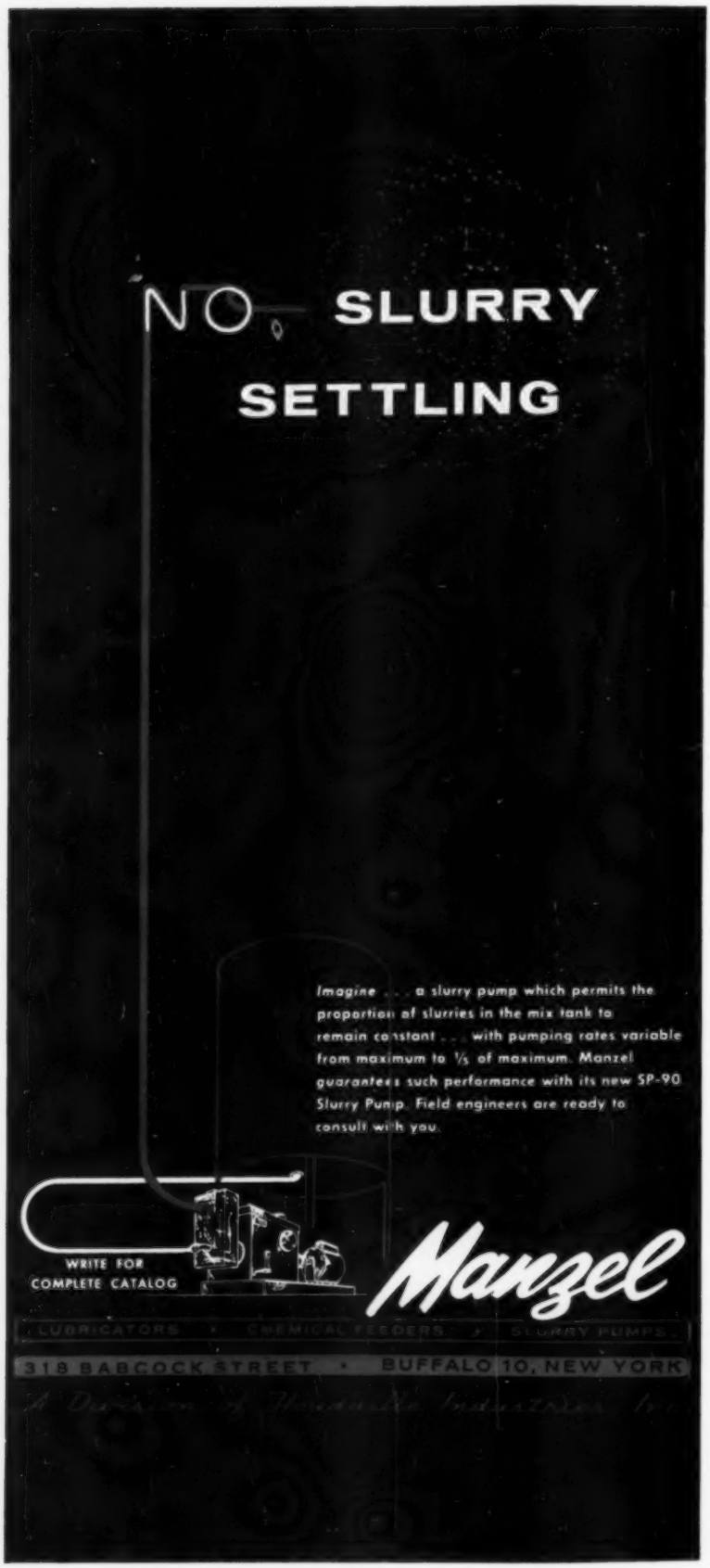
Superior Steam Generators are not only designed and built better, they are given the right start on the job.

18 sizes from 20 to 600 b.h.p. for pressures up to 250 p.s.i. or for hot water. For complete details, write for Catalog 811.

SUPERIOR COMBUSTION INDUSTRIES INC.
TIMES TOWER, TIMES SQUARE, NEW YORK 36, N.Y.

SUPERIOR
STEAM GENERATORS

Plants in EMMAUS and WILKES-BARRE, Pennsylvania


NO SLURRY SETTLING
Imagine . . . a slurry pump which permits the proportion of slurries in the mix tank to remain constant . . . with pumping rates variable from maximum to 1/5 of maximum. Manzel guarantees such performance with its new SP-90 Slurry Pump. Field engineers are ready to consult with you.
WRITE FOR COMPLETE CATALOG
Manzel
LUBRICATORS • CHEMICAL FEEDERS • SLURRY PUMPS
318 BABCOCK STREET • BUFFALO 10, NEW YORK

News (Continued)

(*Starts on Page* 10)

uses for such a system are temperature control of quench baths, lubricating and cutting oils, wire-drawing compounds, hydraulic press oils, degreasers, transformers, electronic sets and, in the chemical process industries, cooling of reactions, evaporating, distilling and condensing.

One of the most novel displays at the exposition will be the Guide-O-Matic industrial tractor, which safely threads the aisles of an industrial plant with several trailer loads of material in tow, **without an operator** at the steering wheel. Control of the train is effected by electronic signals, communicated to a receiver on the tractor from a guidance wire, which may be embedded in the floor, laid on the floor under a protective tape, or strong overhead. The tractor operates at 3 to 6 miles per hour, and is equipped with hand controls, for conventional battery-operated tractor operation when required.

Parker Appliance—Southeast

Appointment of **J. M. Tull Metal & Supply Company,** 285 Marietta Street N.W., **Atlanta, Georgia,** as distributor for Parker Tube and Hose Fittings and Tube Fabricating Tools has been announced by the **Parker Appliance Company,** Cleveland, Ohio.

Tull's branches in Jacksonville, Miami and Tampa, (formerly Florida Metals, Inc.), have been established warehouse outlets for Parker fittings for several years.

For technical assistance as needed, the Tull Company has available the service of **Lew C. Ely,** Parker District Manager for the Southeast, with headquarters in Atlanta.

Infilco—Southeast

Infilco Inc. has announced the movement of **Ed Crowley** to the **Atlanta** area. He has been with the company for almost five years. Before that time he spent thirteen years in the paper and pulp industry in Houston and Minneapolis.

Mr. Crowley will take his position at once and specialize in the fields of municipal and industrial water supplies and waste treatment.

Free-moving crane.

One-piece forged hanger.

Twin section track.

Overlapping splice.

Rugged switch construction

Compact electrification

Automatic dispatch carrier.

TAILOR-MADE SYSTEMS
FROM STANDARD PARTS

Standard American Monorail units offering the many advantages illustrated, are combined into systems for handling any type of unit loads.

These systems are available for manual, electric or automatic operation with local or remote control.

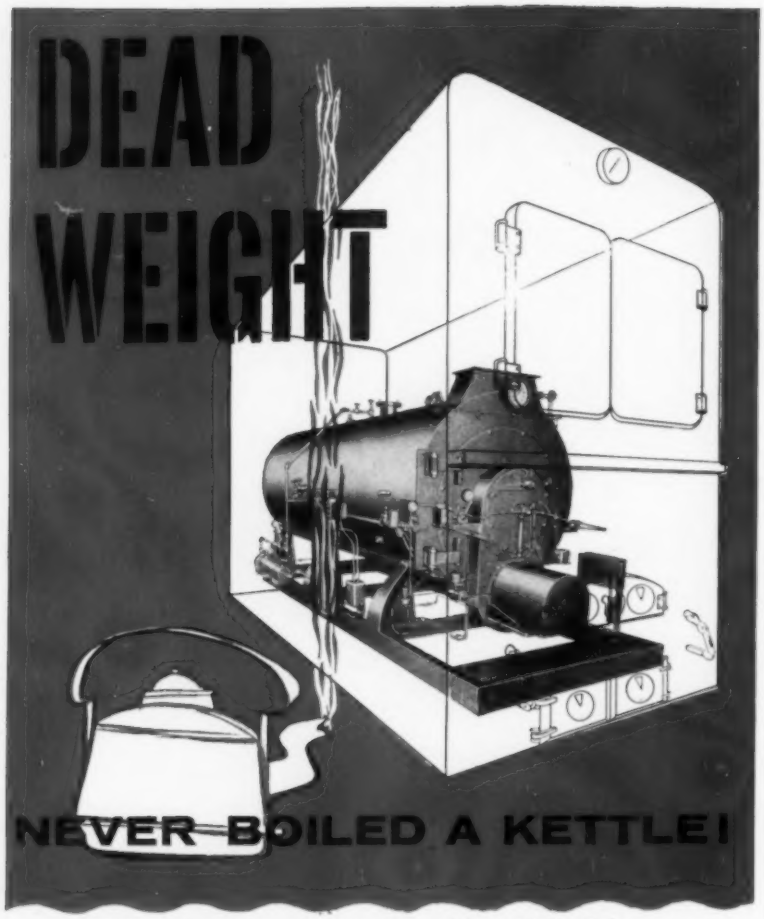
Experienced Monorail engineers will tailor-make a cost-saving handling system from standard parts to fit your specific needs.

Write today for Bulletin C-1.

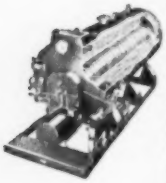
Member of Materials Handling Institute · MonoRail Association

AMERICAN OVERHEAD HANDLING EQUIPMENT MONORAIL COMPANY

13105 ATHENS AVENUE, CLEVELAND 7, OHIO (IN CANADA—CANADIAN MONORAIL CO., LTD., GALT, ONT.)



THERE'S no practical *use* for the excess weight and bulk of the conventional steam and hot water generator, with its maze of tubes, passes and refractory baffles. The Cyclotherm design incorporates just 2 passes to give you a guaranteed minimum efficiency of 80%. Complete combustion with uniform heat-transfer in the first pass utilizes approximately 65% of your fuel value; the balance is transferred in the second pass. *Fifty* passes would accomplish no more. Cyclotherm *is* compact—up to ⅓ smaller than other packaged steam generators.



CYCLOTHERM Steam and Hot Water Generators are designed, engineered and constructed in the Cyclotherm plant to give you the finest in packaged steam or hot water generators. Factory insulation with fiberglas plus aluminum jacket saves up to $600 in field-insulation. Every unit test-fired before leaving the factory. The Cyclotherm reaches you completely assembled — five simple connections and it is ready to go to work. No expensive stack required; no special foundation. Up to 50% saved in maintenance costs by simplified design and by electronic control system that automatically operates Cyclotherm as load requires.

MANY plants have installed two or more Cyclotherms for maximum flexibility and power. Cyclotherm stands back of its product with sales engineers close by whenever you need them. Fifteen models, from 18 to 500 hp (15 to 200 psi). For full information on a boiler that represents the most advanced engineering in steam generation, mail the coupon today.

YEARS AHEAD IN STEAM GENERATION
CYCLOTHERM®
Steam & Hot Water Generators

Cyclotherm Division
National-U.S. Radiator Corp.
2228 E. First St.
Oswego, N. Y.

Send me free copy of your complete booklet on Cyclotherm Steam and Hot Water Generators

News (Continued)

Louisiana Firm Represents Penn Industrial Division

Williams Equipment Company, Metairie, La., has been named representative of the **Penn Instruments Division** of Burgess-Manning Company, with territory in **Louisiana** and the **lower Mississippi** area.

Homestead Valve—Southeast

W. E. "Bill" Thomas has been appointed Regional Manager for the

valve division of **Homestead Valve Manufacturing Company,** Coraopolis, Pa. He will manage and direct the training of valve specialists in the company's distributor organization within the eight southeastern states from Virginia to Mississippi.

With nineteen years of industrial sales experience, including five years' prior service with Homestead Valve, Mr. Thomas is well equipped to give valuable aid in solving valve problems. He will make his headquarters at 305 Church Street, **Decatur, Georgia.**

Chase Brass—Carolinas

The appointment of **Herman H. Kremer** as Staff Manager of Rod and Wire for the **Chase Brass & Copper Co.** was recently announced. Mr. Kremer had been District Manager of the Chase sales office in Charlotte, North Carolina.

Replacing Mr. Kremer as District Manager at the Charlotte, North Carolina sales branch will be **Thomas E. Cox,** previously a Chase salesman assigned to the St. Louis district.

J-M 85% Magnesia is lightweight . . . easy for workmen to install half-sections on this 10″ steam line. Insulation work at the Grace Chemical plant was performed by Young Sales Corporation of St. Louis. Engineering and construction was directed by Foster Wheeler Corporation of New York.

Your Btu's and dollars go further when you specify **Johns-Manville 85% Magnesia**

. . . the choice of insulation engineers at Grace Chemical's new Memphis plant

INDUSTRY'S LONG-TIME standard for temperatures to 600F is still your best insulation buy. For J-M 85% Magnesia provides high insulating value, easy application, long life, initial low cost and minimum maintenance. That's why insulation engineers consistently specify J-M 85% Magnesia for modern installations like Grace Chemical's new anhydrous ammonia-urea plant. That's why it will pay you to specify J-M 85% Magnesia for your new plant or modernization program.

To assure you maximum value from your insulation dollar, Johns-Manville gives you complete drawing-board-to-job-site service. You get expert recommendations by the world's most experienced insulation engineers . . . plus expert installation by authorized J-M Insulation Contractors. Write today for further information on J-M 85% Magnesia and Johns-Manville's unmatched facilities to solve your insulation problems. Address Johns-Manville Box 14, New York 16, N.Y. In Canada, Port Credit, Ontario.

J-M 85% Magnesia also comes in block form. Here you see it being applied to a vertical drum at a New Jersey petroleum refinery.

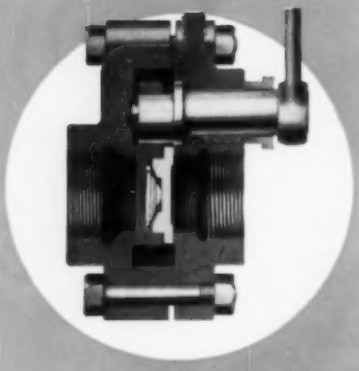
JM PRODUCTS

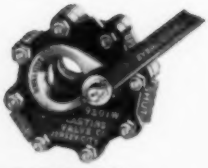
Johns-Manville *first-in* INSULATION

MATERIALS · ENGINEERING · APPLICATION

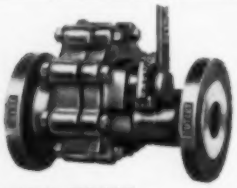
Everlasting Valves

are superior for many services



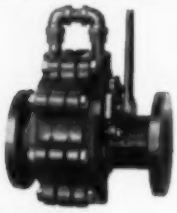


BOILER BLOW-OFF
Quick acting, also handwheel operated "Y" and angle types. For pressures up to 600 psi.



GENERAL SERVICE
Where drop-tight seal and full flow is essential.

CYLINDER OPERATED
Can be remotely controlled, electrically or manually.



STEAM JACKETED
Assures free flow of viscous materials.

WEIGHT-OPERATED
For automatic drains or emergency shut off.

When you want

- quick action
- drop-tight seal
- minimum pressure drop
- straight-through full flow
- self-grinding rotating disc
- valves that cannot wedge or jam

then you want an Everlasting Valve

No other valve has all the Everlasting features . . . proven by half a century of service to assure dependable, leak-tight service.

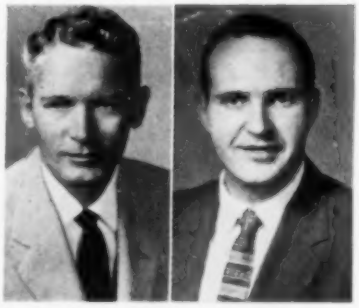
LET US HELP YOU WITH YOUR VALVE PROBLEMS

EVERLASTING Valves

EVERLASTING VALVE CO.
53 FISK STREET, JERSEY CITY 5, N. J.

EV393

News (Continued)



Earnest Capell & Sidney Land

Will Corp. of Georgia Representing Dollinger

Earnest C. Capell and **Sidney L. Land**, sales engineers for the **Will Corp. of Georgia**, have been named to represent the **Dollinger Corp.** of Rochester, N. Y., manufacturers of filters for every industrial need, in the sales territories of **Georgia** and **northeastern Florida.**

Both men hold bachelor of science degrees in chemical engineering, Capell having graduated from Alabama Polytechnic Institute and Land from Georgia Institute of Technology.

Cameron & Barkley Co.; Orlando and Tampa, Fla.

The appointment of **P. L. Moore** as Manager of the **Orlando, Florida,** branch of **The Cameron & Barkley Co.,** has been announced by Rufus C. Barkley, President.

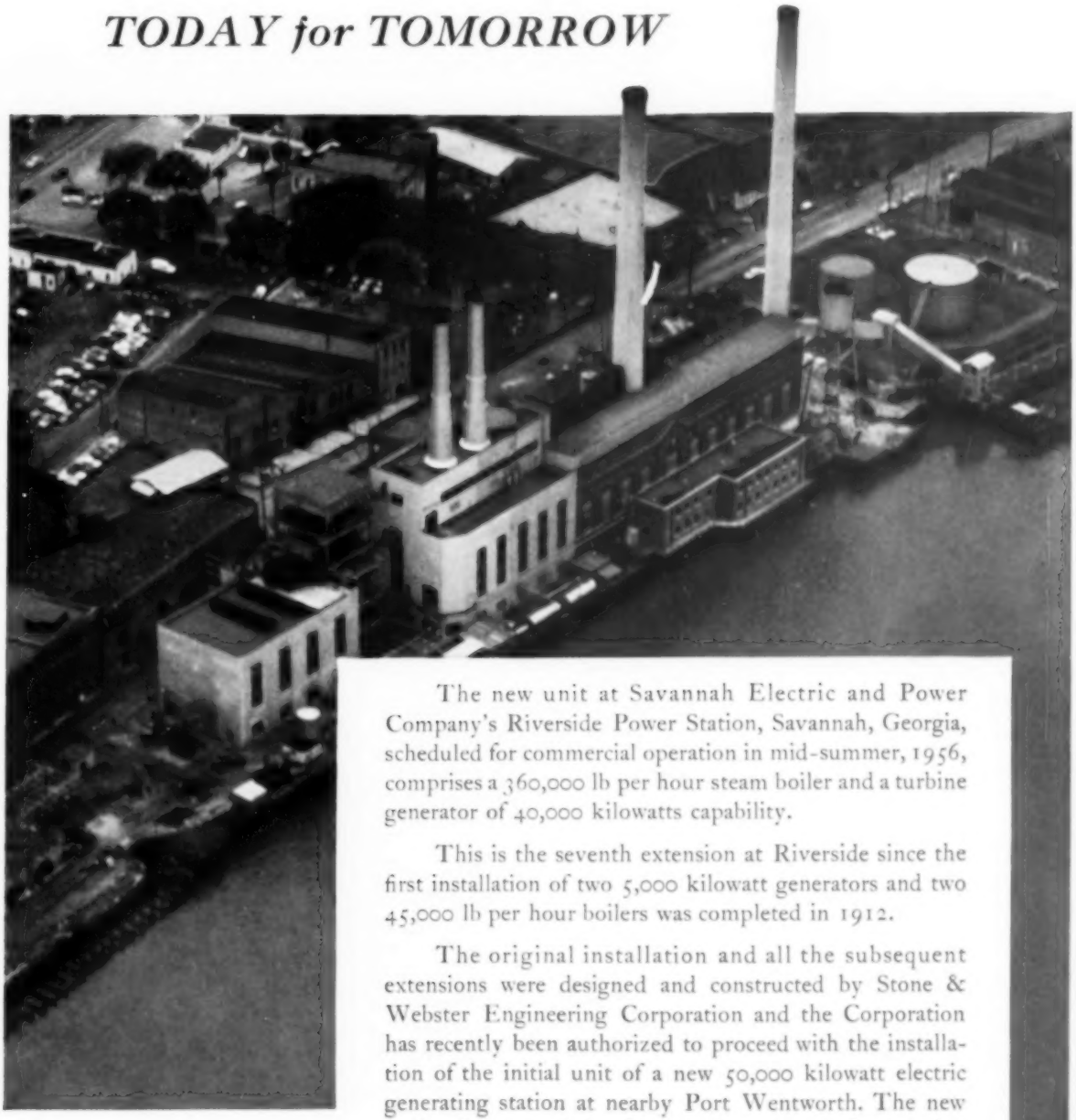
Mr. Moore joined Cameron & Barkley as a stock clerk in 1947. In 1950 he was promoted to the Cambar sales force.

Plans for the expansion of the Orlando branch to take care of the tremendous industrial growth of the area are proceeding on schedule. The company plans new office and warehouse facilities.

William A. Leavell, Jr. has been appointed sales representative in Tampa for the company, replacing Mr. Moore. Mr. Leavell formerly owned and operated his own industrial supply and equipment company on the west coast of Florida.

(More News — Page 104)

SAVANNAH ELECTRIC PREPARES *TODAY for TOMORROW*



The new unit at Savannah Electric and Power Company's Riverside Power Station, Savannah, Georgia, scheduled for commercial operation in mid-summer, 1956, comprises a 360,000 lb per hour steam boiler and a turbine generator of 40,000 kilowatts capability.

This is the seventh extension at Riverside since the first installation of two 5,000 kilowatt generators and two 45,000 lb per hour boilers was completed in 1912.

The original installation and all the subsequent extensions were designed and constructed by Stone & Webster Engineering Corporation and the Corporation has recently been authorized to proceed with the installation of the initial unit of a new 50,000 kilowatt electric generating station at nearby Port Wentworth. The new station is part of the Company's program for keeping ahead of the area's rapidly increasing industrial and residential power requirements.

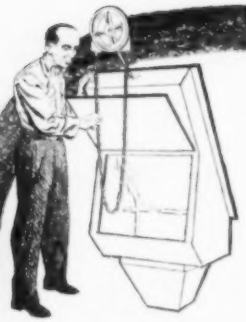
Eighty per cent of the Engineering Corporation's construction work since 1889 has been in the nature of "repeat orders" from previous clients.

Write or call for our new booklet, "How Stone & Webster Engineering Corporation Can Help You".

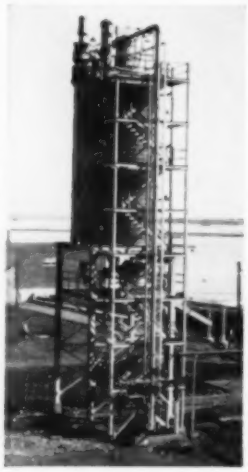
STONE & WEBSTER ENGINEERING CORPORATION

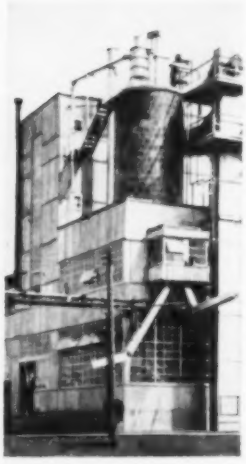
A SUBSIDIARY of STONE & WEBSTER, INC.

New York Boston Chicago Pittsburgh Houston San Francisco Los Angeles Seattle Toronto

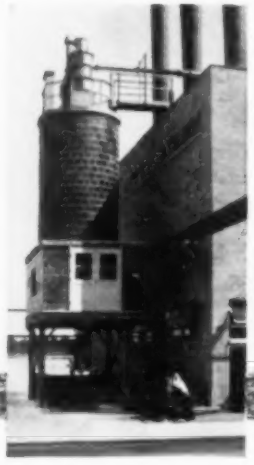


100 ton Ash Silo straddling R.R. track with full stairway to roof. High capacity Ash Conditioner on open platform with discharge to R. cars.





Ash Silo constructed integrally with boiler house. Ash Conditioner mounted inside building. Bifurcated chute allows R.R. car or truck loading.



Ash Silo for truck loading with enclosed room for ash conditioner.

American Cyanamid Co.
American Gas & Electric Service Corp.
American Sugar Refining Co.
Calvert Distillers
Carrier Corp.
Central State Hospital of Virginia
Chemstrand Corp.
Chicago Pneumatic Tool Co.
Cluett-Peabody Co., Inc.
E. I. DuPont
Ford Motor Co.
General Foods Corp.
General Motors Corp.
Glidden Co.
B. F. Goodrich Company
Grumman Aircraft
H. J. Heinz Co.
Hoover Company
Indiana University
Kelsey-Hayes Wheel Company
John A. Manning Paper Co.
Marion Power Shovel Co.
Mergenthaler Linotype Co.
National Distillers
Charles Pfizer Co.
Pittsburgh Plate Glass Co.
Public Service Electric & Gas Co.
Ravenna Arsenal
Riegel Paper Corp.
Rohm & Haas Co.
Square D Company
Stauffer Chemical Corp.
U. S. Steel Corp.
Universal Atlas Cement
University of Missouri
Villanova College
Wake Forest College

These fine organizations, and hundreds like them, choose National for

ASH REMOVAL AT LOWER COST

Interested in Ash Conveying equipment? Ask your nearest *National* representative to show you, without obligation on your part, how costs can be cut with a National Pneumatic Steam-operated or Motor-driven Air Exhaust Type System. National offers a nation-wide installation service – high operating efficiency based on tons of ash handled per pound of steam used – rugged, wear-resistant pipe and fittings that provide lower maintenance cost per ton of ash conveyed. Consult National now – one contract covers everything, from inception to finished installation.

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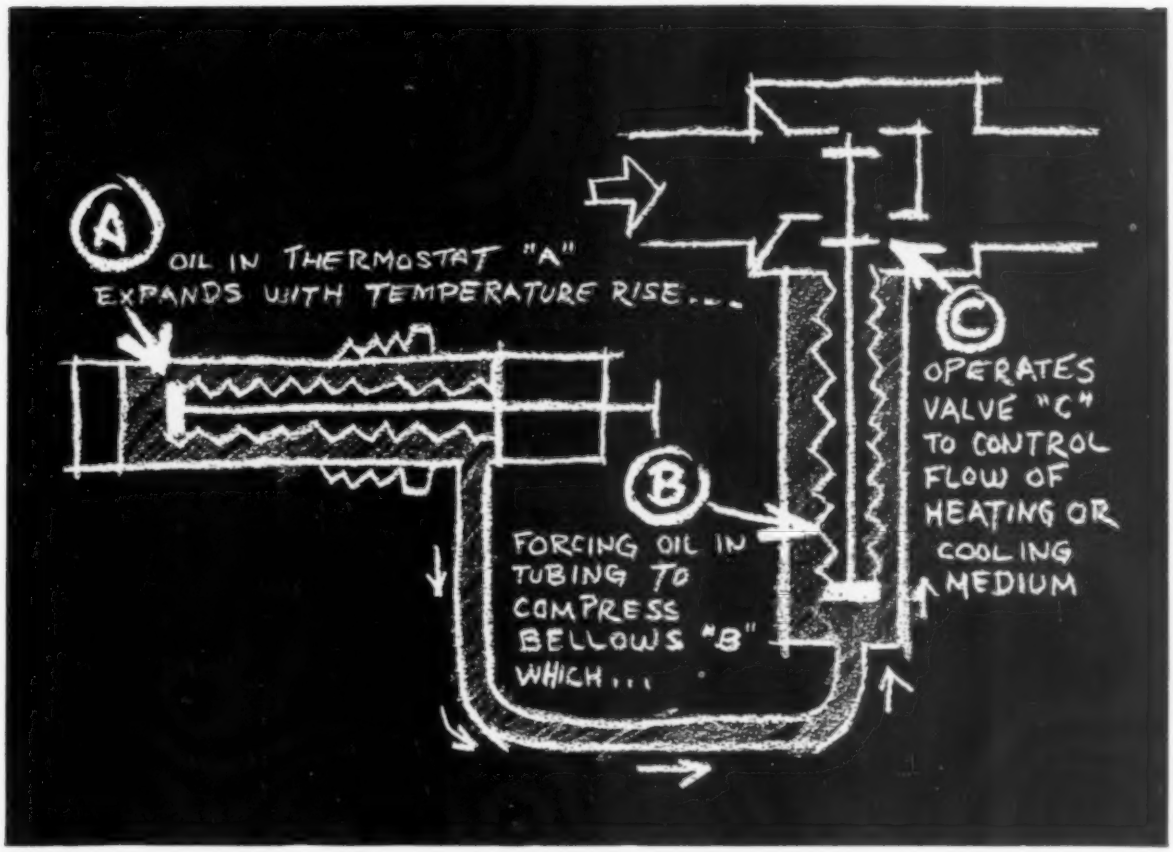
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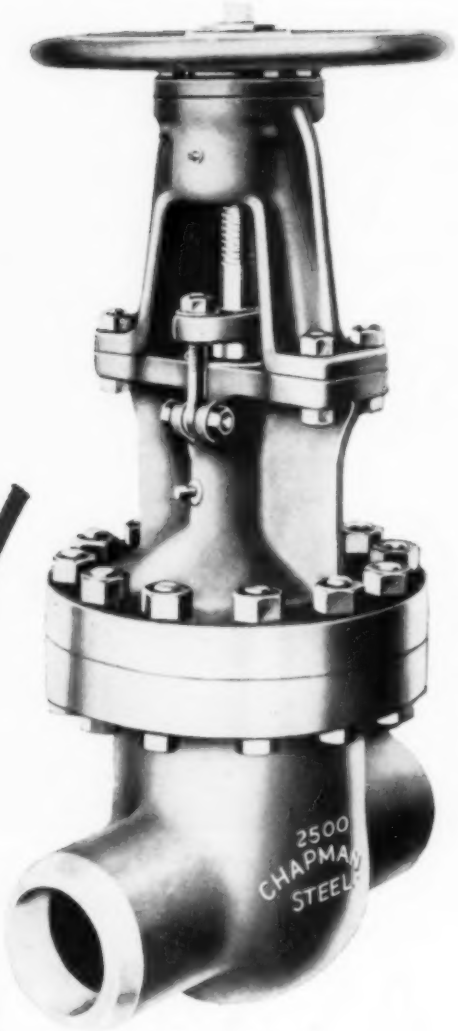

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TIMELY COMMENTS

SOUTHERN POWER AND INDUSTRY

RE-EXAMINE at Least Once a Year

THIS IS SPI's 9th Annual BETTER PRODUCTION Issue — The entire theme is important. No plant engineer will deny the need for "Better Production" but perhaps too few realize the importance of the word "Annual" used in this connection. Each year can actually be BETTER (production-wise) than the year before.

There are two good reasons why it is desirable to re-examine equipment and procedures at least once a year:

1. New possibilities for improvement are being discovered or re-discovered nearly all the time. You do not simply design a good plant, set a good procedure, and continue the same technique indefinitely. Not only are there continuous improvements in materials and machines, but emphasis changes from year to year. A change in raw materials cost or quality may indicate a variety of changes in the processing plant. Or increasing cost of manpower may necessitate better materials handling, more automatic controls. Likewise a change in the finished product may make old methods obsolete overnight.

2. "A new broom sweeps clean." Human behavior is not infallible. So those advances made a year ago begin to slip backward. Many of the advantages begin to evaporate as the shiny new equipment is allowed to lose its fine adjustment and operators get tired of keying up to top performance. Re-examination of old procedures and adding a bit of change in way of improvements does much to keep the production organization on its toes.

Before some bright young mathematician writes in and asks: "What are you going to do to improve after you reach 100%?" We had better settle that point.

In the first place we haven't heard of anyone reaching 100% perfection yet. But if anyone did, he would not stay perfect long. Because, in the game of production, the rules are always being changed. By the time you approach perfection in one instance, you are faced with a new sets of needs. That is what makes industrial work so fascinating. There is always room for improvement — always room at the top.

"Well if all of that is true, why read about it? We are just as smart as anybody else; why not go ahead and devise our own improvements?"

Certainly each man should make his own improvements, conduct tests, experiment, and perfect. But no individual can personally accomplish a very great portion of the whole job, for the simple reason that life is too short. We have to know about and use the experience of others in order to accomplish very much ourselves. A great engineer may put the results of his life's work in one book that may be read and digested in a few hours—a foreman may need only a few minutes to explain something that his assistant would require weeks to learn the hard way.

Those that study this issue will find answers, or partial answers, to many of their problems. The editors have not endeavored to present highly technical, research-type information. Rather, they have brought together a vast store of working knowledge that would be hard to get elsewhere—everyday answers to common questions that demand plain answers throughout plants in the South and Southwest.

"Short on theory and long on practice" perhaps, but the basic facts are here. Material gathered from a great many sources is presented in CASE STUDY form. That is, each article describes an actual problem in an actual plant, and presents a proven answer.

Skip those items you already know about, and read carefully those that tell you something new.

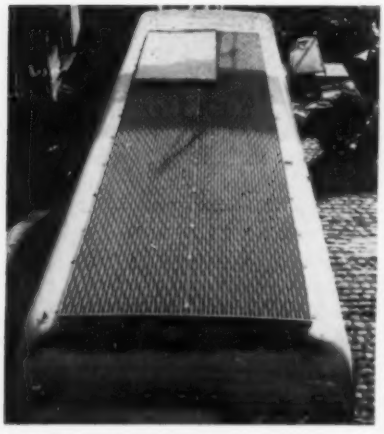
BORDEN *first* IN FLOOR GRATING

USES OF GRATING . . . WHERE ONLY BORDEN QUALITY WOULD DO . . .

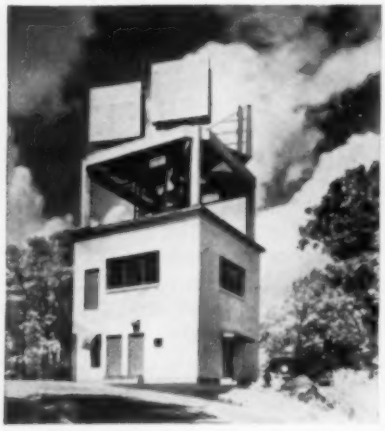
Here on this page are a few of the many new or unusual uses for grating being pioneered every day. Each is an exacting job where only standards of quality equal to BORDEN'S will do.

And remember . . . BORDEN manufactures every type grating in ferrous and non-ferrous metals.

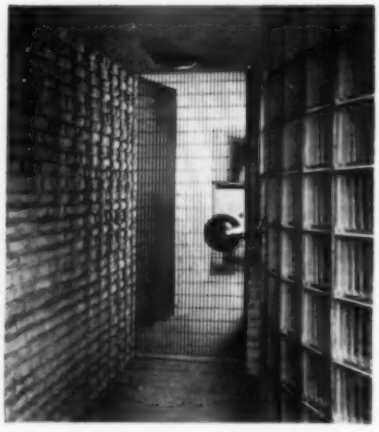
ON THE NEW JERSEY GARDEN STATE PARKWAY . . . Shown here, Borden R/WL Roadway Grating fabricated to exact sizes for sidewalks and center mall on the N. J. Garden State Parkway. Remember, where schedules and dependable performance count, always SPECIFY BORDEN.



Wherever this Color Television truck goes, whatever the assignment of the reporters who must mount its roof, Borden riveted *serra-crimp* grating will mean surerfooting —even in ice or snow.



Television relay stations and radar stations that gird our continent have adopted grating as standard outside platform material. It will not collect snow as most other platforms will.



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INDUSTRY SPEAKS

Long-Term Construction Outlook Favorable

A favorable long-range outlook for construction activity, spanning a decade or more, was voiced recently by WILLIAM COLLINS, president, Walter Kidde Constructors, Inc., engineers and builders of New York and Houston.

"**THE SHARP** upsurge of construction in 1956— led by an unprecedented $2.8 billion in first half industrial contracts — is distributed over a broad base which should preclude any serious or prolonged dips in construction activity. Among factors which influence a favorable long-range forecast, he included population growth, corporate mergers and increased competition.

"From the long-range view, construction can be expected to continue strong because of the constantly growing population which increases the demand for goods and services. The huge amount of liquid capital accumulated by insurance companies and pension funds, together with increasing public acceptance of securities, makes it possible to readily finance construction projects.

Corporate Mergers

"Corporate mergers and company acquisitions in past months have been and will continue to be a source of construction activity. It is important to realize that construction lags behind mergers by a period of two to three years, due to the time required to correct inadequacies discovered in the new organization. Thus the mergers which are taking place this year will not have their full effect upon construction volume until 1959.

Highway Program

"The federal highway program will have a dual effect upon future construction. In addition to its direct contribution, the program will offer industry an attractive opportunity to expand warehousing and distributing facilities. Particularly will this be true of manufacturers of consumer goods who now utilize a few centrally-located points of storage. New, improved roads will enable manufacturers to re-locate warehouse facilities within easy truck access of markets, with subsequent reduction in costs.

"All of these changes — in addition to plant modernization and expansion currently in force — will result in increased competition. Competition, one of the marks of a strong economy, will continue to make industries aware of the importance of efficient manufacturing, assembly and distributing processes.

Modernization Spreads

"Modernization is not confined to the leaders within an industry. First, the leaders modernize because they feel it will strengthen their competitive position, and later other companies within the industry are forced to improve their processes to keep pace. Competition will be one of the hall marks of the next decade.

Research and New Products

"A final contributing factor to favorable long-range construction activity is the amount of research presently being underwritten by industrial concerns. As new products continue to result from research programs, new plants will be required for their manufacture.

"The atomic energy field will provide one such source of new developments. Research expenditures in the atomic energy field in recent years will have a far-reaching effect, both on construction and upon the national economy."

Ninth Annual BETTER PRODUCTION ISSUE

How to Get More for Your Plant Dollar

48 CASE HISTORIES from the South and Southwest

Case 1 — Georgia Aircraft Plant

THREE STAR LIGHTING

★Installation, ★Production, ★Maintenance

LOCKHEED Aircraft Corporation at Marietta, Georgia has recently relighted their Small Tool Repair Shop Grinding Area with outstanding results.

Primarily the necessity of relighting resulted from the demand of production that a higher quality of grinder work be produced. While supplemental lighting of sufficient quantity to perform the exacting machine operations was provided, the general level of lighting produced by an incandescent lighting system was of so low a level as to produce glare problems where the supplemental lighting was used. Some of the shop functions that should normally be performed with only general lighting could not be performed without supplemental light. This tended to slow production and to reduce the quality of the work.

For good seeing conditions where specular (mirror finish) work parts are involved, large area low brightness light sources are the most effective, therefore, the 200 watt glass enclosing globe fixtures were replaced with 2, 40-watt semi-direct (25% up light), and 30° shielded fluorescent fixtures. The footcandle level was increased to an average of 50 footcandles with only a 16% increase in power consumption. The existing wiring system was utilized without the need of additional circuit capacity.

Repainting was also included. By the use of a flat white paint, surface reflection factors were increased about 10%.

The Small Tool Repair Shop is proud of the fine finish they have been able to produce on panel mill cutters with an improved grinder process and the aid of the improved quality of the lighting system. The cutter edge finish has been improved from a 40 micro-inch finish to a 5 micro-inch finish. Improvement in the quality of other shop functions has also been noted, as well as an increase in production.

Installation of continuous rows of fluorescent fixtures presented a

GRINDING AREA—The new lighting installation produces 50 Footcandles of general lighting.

BEFORE AND AFTER — Before relighting the Grinding Area was similar to the area on the left.

NO GLARING ERRORS—An increased general level of light has reduced glare and made defects highly visable.

OLD AND NEW FINISHES—At top is the new edge finish compared to the old at bottom before relighting.

DOWN FOR MAINTENANCE—To test the new maintenance procedure an electrician has removed a fixture.

problem in the Grinder Area because of the overhead interferences (dust collector systems, air conditioning ducts, sprinkler systems, etc.) and the congested floor area which limited the use of scaffolding.

This problem was solved by the use of plug-in fluorescent fixtures. The fixture consists of a uni-race channel with fixture receptacles. This aluminum channel is completely wired on the floor and is then lifted into place by men on ladders. The semi-direct industrial fixture is completely self wired including ballast and a two prong plug. Lamps are installed in the fixture, and the complete fixture unit is then plugged into the channel receptacle.

Installation Made Easy

The electrical contractor who made this installation estimated that the installation time was two to three times faster than the installation time would have been with other systems of continuous row fluorescent fixtures due to the installation problems in this area.

The Maintenance Department is anticipating being able to reduce their maintenance costs on this installation because major maintenance functions can be performed by removing the fixture to the floor or to the maintenance shop. Interference with the Grinder Area function by maintenance will be reduced as there will be no need to cut out entire circuits of light to perform fixture repairs.

Editor's Note: The fixtures were supplied by Gibson Mfg. Co., Atlanta, Georgia, and the contractor was Bartenfeld Electric Co. of Atlanta.

By MRS. ANNE BONDS LOGAN, P.E., Plant Engineering Department, Lockheed Aircraft Corporation, Marietta, Georgia.

Case 2 — North Carolina Dye Plant

Heat Reclaimer Cuts Gas Bill Saves Plant $12,000 Per Year

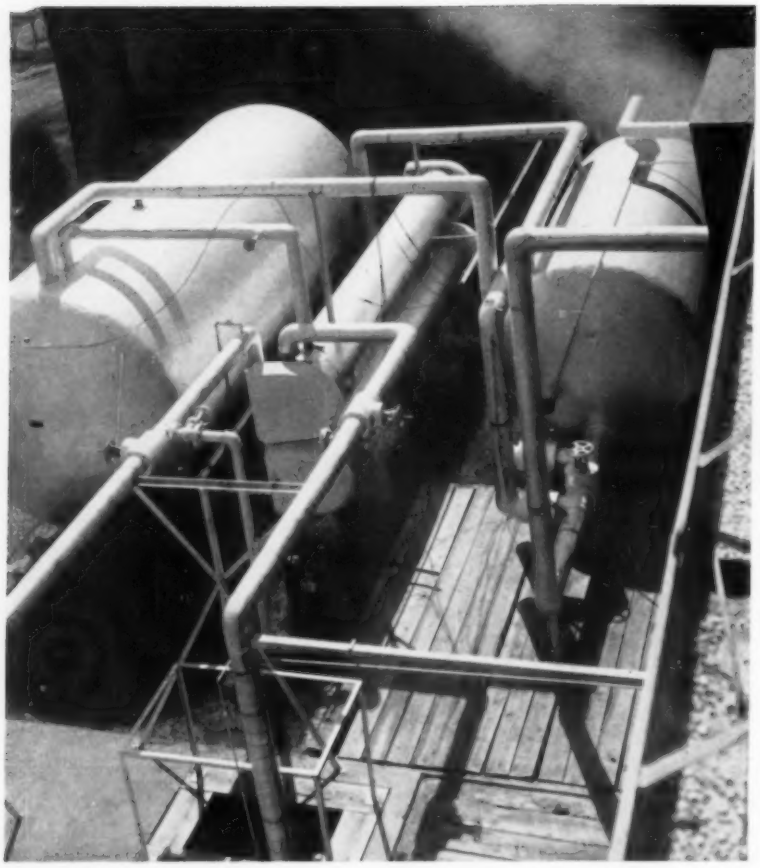
ANNUAL SAVINGS of $12,000 in fuel are being realized at the Textile Division of Talon, Inc. at Stanley, N. C. An estimated savings of 2 million cu ft of natural gas, representing a reduction of 33 1/3% in fuel consumption has been noted by company engineers since the installation of a system of reclaiming waste heat from hot waste dye liquor.

Used to preheat incoming city water within a waste water heat reclaimer, the hot dye liquor transfers its heat to this city water, raising it in temperature as much as 100 F, and all without fuel cost. This preheated fresh water is held in two storage tanks with a combined capacity of 10,000 gallons.

Temperature elevation to near boiling point as required by the dyeing process is accomplished by an instantaneous heater with a minimum steam requirement. Both the instantaneous heater and the waste water heat reclaimer are heat exchangers of the shell-and-tube type.

Former Hot Water System

As originally designed, the water heating system at the Stanley plant consisted of a 3,000 gallon cement-lined accumulator tank and a 19" x 86" instantaneous heater. The demand for hot water at that time did not exceed the capacity of the system and steam consumption was not excessive. However, as production increased and more hot water was needed, the system could not efficiently provide hot water without excessive boiler load due to the limited capacity of the accumulator tank. Its reserve of



Waste water heat reclaimer is installed between 7,000 gallon and 3,000 gallon tanks. Open pit in foreground is sump for dye liquor from vats. Manholes are provided at far end of tanks. All equipment is thoroughly insulated. Pipe leads from smaller accumulator to instantaneous heater inside building.

PLENTY OF HOT WATER is a necessity at the three-year-old Stanley plant which ships zipper tape and cord to Talon assembly plants in Cleveland, Ga.; Morton, Miss.; Woodland, N. C.; and Meadville, Pa.

Installation of the Patterson-Kelley waste water heat reclaimer and accumulator tank in February of 1956 is part of Talon's scientific improvement of production methods. It reduces the natural gas need by one-third.

preheated water was quickly exhausted and the demand fell upon the ability of the instantaneous heater to provide hot water. When requirements exceeded its rated capacity, the water temperature dropped considerably and dyeing operations were stalled.

New Hot Water System

To boost their capacity, Talon engineers decided to install another accumulator tank of greater capacity and, also, a waste water heat reclaimer to recover the valuable heat in waste water from the dye vats formerly pumped off to disposal. In February of 1956, they installed a 96″ x 252″ P-K waste water heat reclaimer comprising two identical units each measuring 25¼″ flange diameter by 20″ shell diameter by 17'3″ long. This mechanical system of water heating is simple to install and maintain and operates efficiently without cost.

Fresh water enters the plant at city pressure and is carried by water mains throughout. A 4″ line leads from the main to a bypass at the 3,000 gallon accumulator. In usual operation this 4″ line is connected to a coupling placed in the bottom of the 7,000 gallon accumulator near one head. However, a valve is provided to divert the water directly to the 3,000 gallon tank if desired.

Entering at the bottom of the larger tank, the water is deflected by an internal baffle along the lower portion of the tank. Here, an adjacent pipe connection draws this water out of the tank and to the bottom of the reclaimer.

The water from the lower portion of the shell is drawn into the reclaimer, where it passes back and forth over the tubes by means of horizontal baffles placed the length of the reclaimer. As it proceeds up to the upper reclaimer unit, heat is being transferred by counterflowing hot waste water in the tubes.

Leaving the top of the upper reclaimer at about 160 F, the heated fresh water is piped to a connection on top of the shell of the 7,000 gallon accumulator. This line is also the return for forced circulation when water is not being drawn off. Then, water circulates from the bottom of the large tank, through the reclaimer, and back again to the top of the tank. This recirculating effect maintains the temperature in the 7,000 gallon accumulator at about 160 F.

When water is being drawn, a pipe connection near the return line from the reclaimer carries warm water to the 3,000 gallon accumulator for storage at higher temperature.

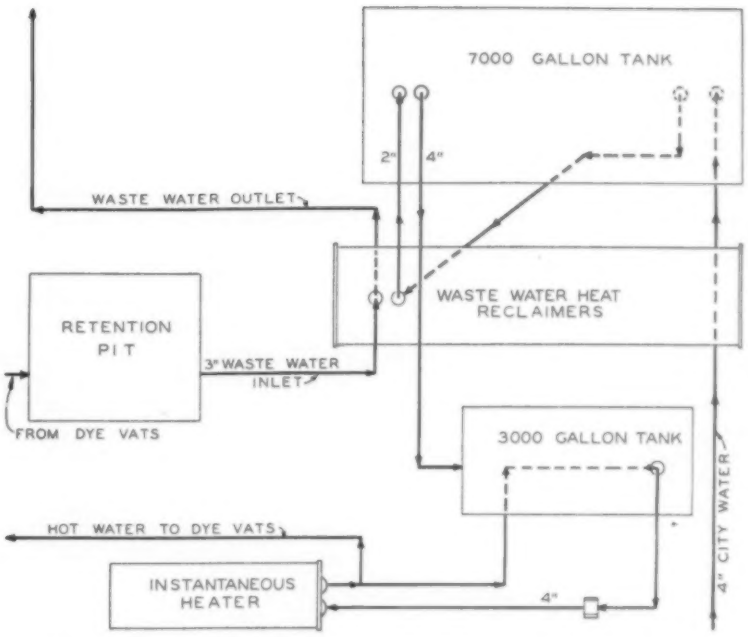
When water is drawn off for immediate use in the dye vats, it is piped from a connection at the top of the 3,000 gallon accumulator, passes through the instantaneous heater where it is boosted in temperature to near boiling point, and it is piped to the vats. When no water is being drawn, a bypass pump maintains a constant circulation between the 3,000 gallon tank and the tubes of the instantaneous heater. This recirculation maintains the temperature of the water in the smaller tank in excess of 160 F. Thus, when water is being drawn to the vats, the recircula-

tion of water between the accumulator tanks and their heating units builds up a substantial supply of hot water to meet peak demands.

The Reclaimer

Preheating of incoming water is done this way at Stanley. Hot dye liquor discharged from the dye vats is piped to a 10,000 gallon underground storage tank where it retains a temperature of about 180 F. From this retention pit, the hot dye liquor is pumped to a connection on the top of the upper unit of the reclaimer which consists of two identical units with a combined design capacity to heat 550 gph of fresh water from 70 F to 145 F when supplied with an equal amount of waste water at 165 F. This reclaimer is constructed so that all metal parts in contact with the waste dye liquor are of type 316 stainless steel. Circulating through the numerous tube passes, the waste dye liquor transfers its heat to the fresh water counter-flowing through the shell. Leaving the bottom of the reclaimer at about 120 F, it is pumped to a waste treatment plant for further cooling and anti-pollution measures before being disposed of.

Cleaning of the reclaimer takes place once every three months, and is done in a few hours.



Flow diagram of heating system at the Talon, Inc., plant, Stanley, North Carolina.

The improved water heating system at Stanley has resulted in major benefits to the plant. The most important is the savings of $12,000 a year in fuel costs. But significant savings are also being made in production costs since no time is being wasted while waiting for hot water in the dyehouse. Also the availability of constant hot water has improved the quality of the dyeing process, making it more even and efficient.

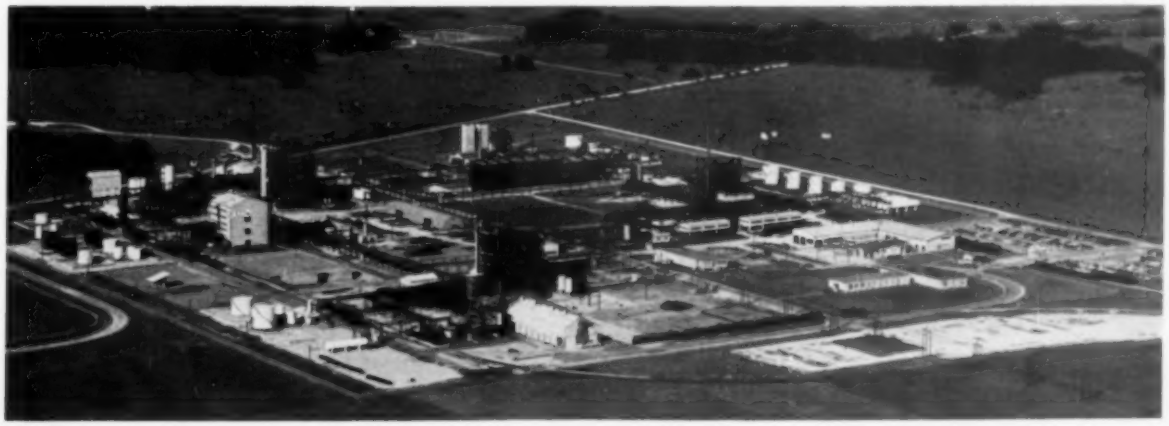
By JAMES J. COLEMAN, Chief Engineer, Textile Division, The Patterson-Kelley Co., Inc., East Stroudsburg, Pa.

Case 3 — Texas Chemical Plant — —

Tanks Important in Rohm & Haas Expansion

ROHM & HAAS Company, with four chemical plants, produces nearly 500 products for industry and agriculture. Perhaps one of the best-known products is Plexiglas, which is widely used in aircraft, automobile parts, lighting fixtures and signs, just to mention a few. This product is termed an acrylic plastic, since it utilizes a group of chemicals as basic materials in its manufacture, called acrylic monomers.

These acrylic monomers are already used extensively in a variety



of other products including water paints, textile finishes, protective coatings, leather finishes and petroleum additives.

Installation of improved processes is part of the company's continuing program of expansion at its Texas plant, which during the past two years has involved an expenditure of several million dollars.

Graver Tank Mfg. Co. was called on to supply several pressure vessels and six storage tanks for this project. The pressure vessels were fabricated in Graver's East Chicago shops, but the tanks, four cone roofs and two open tops, were erected by Graver's Banks Moreland Division, at Houston.

Tank Materials

Three different types of structural materials were required for the storage tanks. These materials include Monel, carbon steel plate and type 316 stainless steel.

The Monel is utilized in an open-topped tank for storing heavy acid residue. This tank is designed to hold 130,000 gallons and measures 41 ft by 15 ft. Being highly resistant to certain chemicals of a metal-reducing nature, this alloy has also been used on numerous occasions in other chemical installations for this purpose.

The other open-topped tank, however, was constructed of type 316 stainless steel. This tank with dimensions of 22 ft by 12 ft is designed to hold approximately 30,000 gallons of acid residue. Stainless steel is often used as a construction material whenever strongly oxidizing chemicals are to be stored.

Carbon steel plate was used in the construction of the four cone roofs. Each of these tanks has a different capacity for chemical storage. The largest is 30 ft by 29 ft with a capacity of 158,000 gallons, another 35 ft by 21 ft holds about 156,000 gallons, a third measuring 30 ft by 20 ft accommodates approximately 102,000 gallons and the smallest, 15 ft by 15 ft, holds about 20,000 gallons.

A pressure vessel used for chemical storage measures 10 ft 6 in. by 70 ft tangent to tangent. Fabrication was from 1¼ in. ASTM A-212 grade B flange quality steel, in accordance with the 1952 ASME Code. It was designed for a maximum working pressure of 350 psi and hydrostatically tested at 489 psi for over an hour. It was also stress-relieved and 100% x-rayed.

Case 4 — Alabama Carbon Black Plant

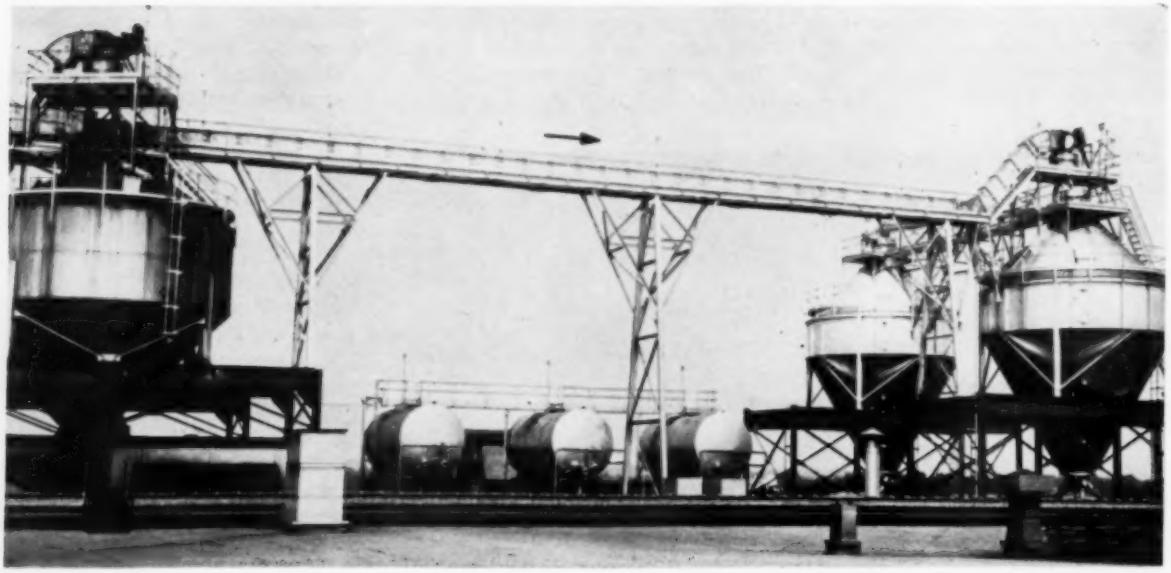
Keeping Carbon Black Clean

WHERE there is carbon black to be handled there will be dirt. However, the B. F. Goodrich Company has embarked on a campaign to clean up carbon black handling in their many plants. They've been successful too, and in the process have improved the product and cut down on handling equipment shutdowns and power consumption. The trick was to switch from bag to bulk handling of black, a procedure made possible by the development of Stephens - Adamson's Zipper belt conveyor-elevator.

In the past carbon black has been almost exclusively handled in bags. Some bulk systems have utilized screw conveyors, but experience has shown that on vertical lifts the fragile beads of black are pulverized and the equipment jammed.

Since carbon black is an important ingredient affecting the physical properties of rubber it is obvious that manufacturers were quite interested in a system which

The first Zipper unit runs horizontally before making an 80 ft climb. The second section shown here makes run of 156 ft horizontally with short inclined lift. Capacity is 9½ tons per hour.



could lift the material without damaging its physical structure. In addition, the jamming caused by degradation of the carbon black boosted power consumption on screw lifts a significant amount.

It was over five years ago that the B. F. Goodrich Company installed their first Zipper unit. Since that time they have followed a steady program of improvement in their carbon black handling systems at plants all over the country. Latest on the list of completed systems is the company's Tuscaloosa, Alabama plant. Two Zipper units are now in operation carrying 9-tons per hour of pelletized black along an irregular path totalling almost 290 ft.

The first Zipper unit makes a 40 ft horizontal run before beginning an 80 ft lift with a vertical and steep inclined run. At the discharge point the black may be directed to a storage bin or chuted to another Zipper running 150 ft to additional storage tanks.

Big advantage of the Zipper unit lies in the fact that the rubber belt forms a snug tube around the material and moves with it to the discharge point. Thus there is no chance for degradation. Sealing lips on the belt prevent escape of black and, since the belt operates out in the open, it is protected by a light steel housing.

Case 5 — Louisiana Mill

Modernized Power Transmission

SOME very interesting work has been done to modernize the drives of the various machines at the Lake Rice Mill of Lake Arthur, Louisiana. This has involved the use of different items of power transmission equipment suggestive of efficient applications in other kinds of industrial operations.

For instance, three 60-in. Engelberg stones were equipped with roller bearings, individual motor drives and fluid couplings. These machines are used to remove the hulls from the grain (see Photo I). The stones used here are of the under-running type with the top disc stationary while the bottom one turns, both being covered with carborundum. Ordinarily the stones are driven from a lineshaft (which was the case here) and require a mule drive because the stone shaft is vertical and the lineshaft horizontal.

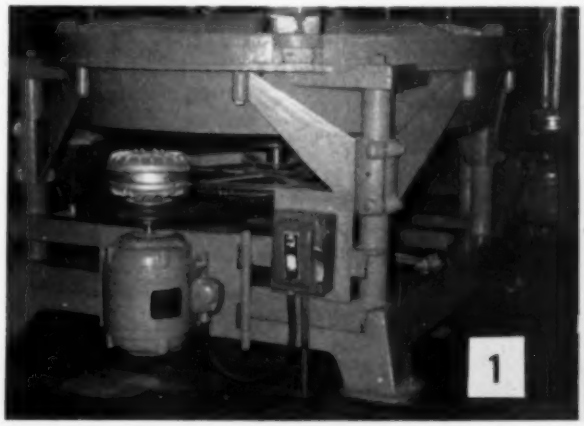
In the first place the two split flat bearings for the revolving stone were replaced with Timken roller cartridge units mounted in a specially machined outside cast iron housing that permits the shaft to be adjusted up and down to compensate for differences in length of short or long grain varieties of rice. The original ball bearing toe or thrust bearing was retained.

A 5 hp, 1800 rpm normal torque U. S. motor was installed with a Twin Disc 8.4 fluid coupling on the motor shaft to give the normal torque motor the ability to start the heavy stone. Two steel cable V-belts are used to transmit power from the motor to the stones. The owner of the mill is said to be well pleased with the results of this conversion.

As part of its modernization program the Lake Mill converted all lineshafting to ball bearing supports. SKF pillow block adapter type bearings were used where flat surfaces were available for mounting them and Fafnir hanger type bearings where suspended bearings had been used. Dodge Timken cartridge type bearings were used for the vertical bearings.

Power for the mill is provided by a 141 hp Coppus steam turbine operating at 3600 rpm. It is connected to a helical gear speed reducer through a flexible coupling. The low speed shaft of this reducer is extended by a flexible coupling and two ball bearing pillow blocks with the main drive pulley mounted on this shaft. Power is delivered to the main shaft by a 14-in. three-ply endless oak tanned flat leather belt. Photo 2 shows the steam turbine at the left and the main drive pulley and belt.

The steam turbine also supplies electrical power by driving a 60 kw Columbia generator from a pulley on the same shaft on which the main drive pulley serving the lineshaft is mounted, as seen at right in Photo 2. This is a short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center drive and power is transmitted by a Royal Chrome two-ply flat leather belt 10-in. wide. Because of the short distance between centers and the stepped up speed of the generator the latter is mounted on a ball bearing tension control base.

Other Improvements

An arrangement of SKF ball bearings was installed on the Bernard and Lea rice paddy machine which greatly improved its operation and may well be suggestive of other helpful applications. The paddy machine separates hulled from unhulled rice as the rice comes from the stones after aspiration to remove the loose hulls. This separation is accomplished by running the machine at various speed between 90 and 135 rpm. Its motion is reciprocating so that the grain sifts through various compartments, with heavy grains going to the low side and the lighter grains to the high side of the tilted table. An eccentric mounted on the shaft provides throw of the table by an arm from the eccentric anchored to the table by brass bushings on a rigid shaft.

The arrangement described above was troublesome and noisy, required constant attention and was difficult to lubricate. These troubles were eliminated by anchoring two 509 SKF ball bearing units to the frame of the machine and pulling up the brass bushings tight so that the shaft rotates in the ball bearing housing.

By RAYMOND BUTLER, Crowley, La.

Case 6 — South Carolina Carpet Plant

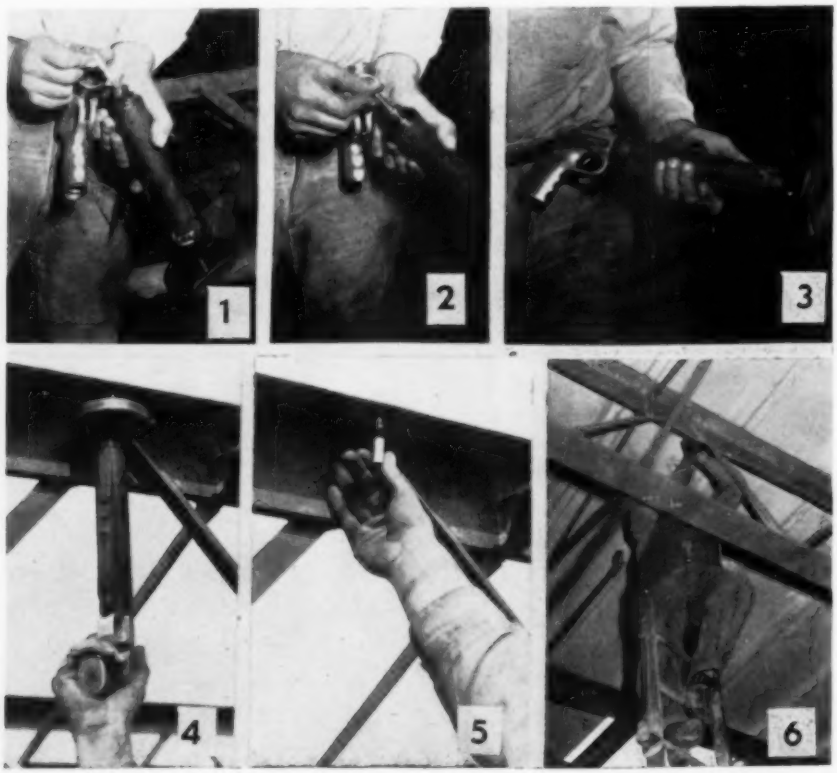
Over $1,100 Saved in Hanging Sprinklers

THE NEW plant Landrum Mills, a unit of Bigelow Sanford Carpet Co., at Landrum, S. C., not only embodies the latest in design concepts but also the most modern of construction methods were employed in erecting the structure.

For example, the installation of studs from which to suspend the sprinkler system was simplified and accelerated by using a powder-actuated system of fastening which includes integrated units: a tool, a powder charge, and a fastener. The system is keyed to modern steel and concrete construction and was developed to make fastening simple, fast, and economical.

In this instance approximately $1,125 was saved in applying 2,800 fasteners and couplings for the sprinkler system alone. A "Ramset" gun (Olin Mathieson Chemical Corporation) was used to shoot ⅜" diameter studs into steel at a rate three times faster than the next best older method. The savings were effected by speeding the operation and not by reducing the personnel required to do the job.

Durability and strength of the studs are greater than many fasteners because the fasteners are made of much higher grade steel with cadmium plating to prevent



(1) High grade steel stud ⅜" dia is "projectile" loaded into gun.

(2) Charge similar to .38 pistol cartridge is placed in gun behind projectile.

(3) Breech of gun is closed and locked with charge and stud in chamber ready for firing.

(4) Stud is shot into steel beam by placing muzzle flush and pulling trigger.

(5) Hanger is screwed onto threaded stud ready to receive sprinkler suspending sling.

(6) Operator shoots one through steel beam with roof members already in place, demonstrating simplicity of operation.

rust. The advantages of these fasteners become more apparent in instances where bar joist construction is used; it would be impractical to put a clamp on the top member of a bar joist with the roof slab resting on it.

The only disadvantages noted involve selection of the right stud for the job at the outset; once set, a stud cannot be moved or replaced. Therefore, the fastener or stud must be put in correct location initially. Also, the studs should not be used in steel less than ¼" thick.

Other applications showing similar savings include: running electrical conduit, hanging lights, mounting switch boxes and outlets, suspending ducts, pipes, fans, and partitions. In short, "Ramset" is an integrated fastening system for setting threaded studs (or nail-like pins) into concrete or steel for attaching construction materials. The system reduces costs, makes happier, more efficient operatives by reducing fatigue, and provides a superior anchor quickly, easily, and securely. The gun has required no maintenance, and non-corrosive powder charges are used.

Case 7 — Texas Aircraft Plant

Excess Equipment Put to Work

EXPERIENCE gained from the following case study may lead plant engineers to turn back to the old boiler house and re-study it for hidden values. It is an example of utilizing means at hand to solve a problem which otherwise would involve considerable time and expense.

Constant increases in the load from machine tools, lighting of acceptable intensity levels, etc., have loaded many plant electrical systems to the limit. But in the meantime, steam as a source of industrial energy, has suffered a decline in many production plants.

Production Demand

Convair Division of General Dynamics Corporation, Fort Worth, Texas, recently faced a serious problem in the development of a new aircraft component manufacturing technique.

Modern high performance aircraft require many new types of materials and manufacturing methods. One of these is the use of "honeycomb bonded" panels or skins. A common construction consists of inner and outer aluminum alloy sheets with a fiberglas plastic "honeycomb" bonded between with an adhesive.

In the past this has not posed too difficult a problem, as with low performance aircraft and low stresses, a variety of bonding methods were satisfactory. Now, however, stresses are higher and tolerances, both dimensional and in quality are very tight. To obtain satisfactory bonds precise control of pressure and temperature are necessary. Also, the rate of heating and cooling must be controlled.

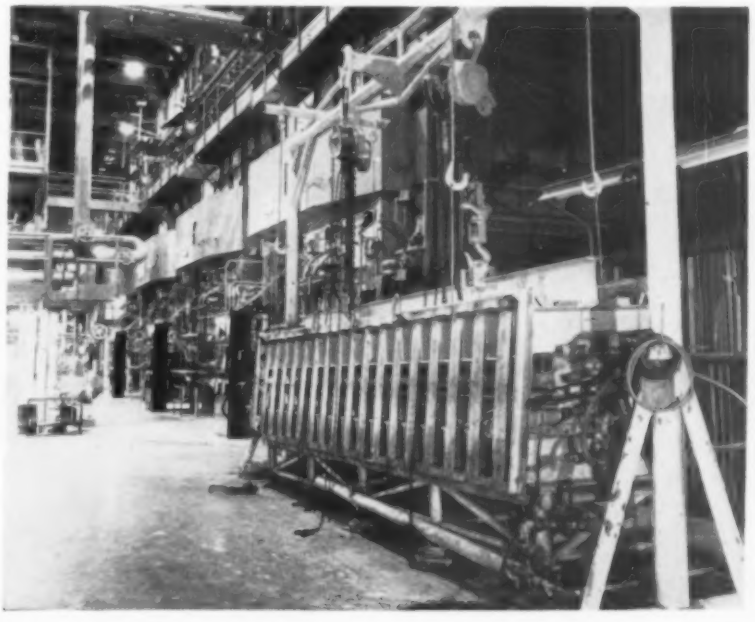
Steam Utilized

Heating methods investigated included circulating hot liquid, electric resistance units and steam. Steam seemed to have many advantages which, together with its availability due to excess boiler capacity, tipped the scales in its favor. Other methods would have added to the already heavy electrical load, while steam demands had decreased so that only two of the four boilers could carry the load.

Tool engineers, aided by plant engineers, designed the steam heated fixtures. The illustration shows the first trial production fixture, set up in the boiler room for convenience. In the background are the four 100,000 lb/hr boilers.

Fixture Design

The final design of steam heated fixtures consisted of upper and lower platens, between which insulated dies are held, together with an inflatable stainless steel diaphragm or bladder. The fixtures are made so that the upper platen can be mechanically locked in position, or raised to load, unload and change dies. Due to the variety of sizes and shapes of panels, several different size fixtures are provided. These range



Steam heated fixtures were designed. Here's the first trial production fixture, set up in the boiler room for convenience.

from about three by 3 x 8 ft up to 5 x 20 ft. And sufficient units are provided to put the process on a large production basis.

The dies are made from 2½" thick slabs of rolled aluminum alloy. Slots are milled in both lengthwise edges to form steam headers. Holes are drilled transversely between these slots to form steam passages. After drilling and cleaning, cover plates are welded over the slots, and pipe fittings are welded at the ends.

The complete unit is shaped to approximate contour on a 500 ton hydraulic press brake, then finished by conventional die finishing methods. Aluminum plates are welded to the back of the dies to form boxes so that a pair of dies are brought to parallel condition for mounting. The boxes are filled with cast sil-o-cel-cement insulation.

Operation

In use, with press open and dies in place, the panel to be bonded with the stainless steel bladder on top is placed on the lower die, and the press is closed. Compressed air is applied to the bladder and steam to the dies. Steam pressure is regulated to bring the unit to the proper temperature. When curing is complete, the steam is shut off and cold water is circulated through the dies. This ability to cool the assembly at a rapid, controlled rate is one of the biggest advantages of using steam.

By F. C. CLAYTON, Chief Plant Engineer, Convair Division-General Dynamics Corporation, Fort Worth, Texas.

Case 8 — Florida Water Works

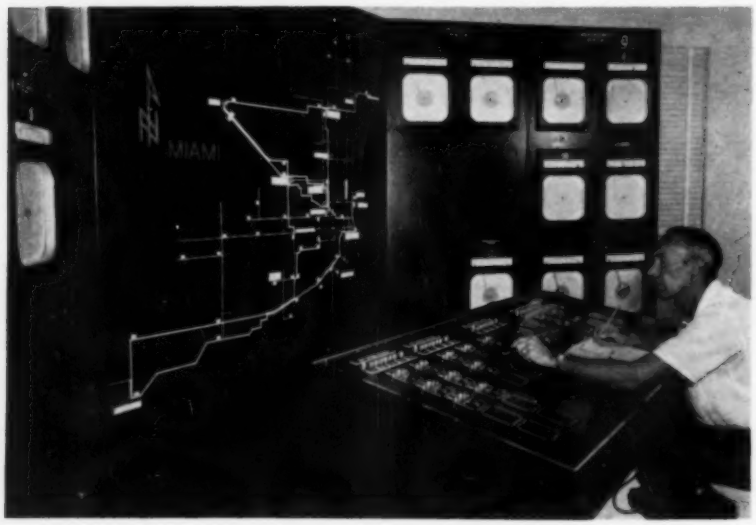
Supervisory Control for Water Supply

DURING the month of August the Department of Water and Sewers of the City of Miami, Florida placed its distribution system under supervisory control. Supervisory control is not new to the Department. It has for a decade been using this means for starting and stopping its well field pumps. The new system is unique, however, in the many other functions it will perform beside the starting and stopping of pumps.

The facilities of the Department of Water and Sewers are widespread and complex. They consist of two water treatment plants, four electric and one steam turbine pumping station, nine 2½ million gallon ground storage tanks, one two million gallon elevated storage tank and many miles of water mains.

Although the operations of these facilities are all under the control of one superintendent, the many employees in the stations and at the treatment plants made for a loosely knit operation. With the new system, one man, located at a central control desk, will be responsible for the entire operation of the water treatment and distribution facilities.

One man at central control desk is responsible for entire operation of treatment and distribution facilities.



The new supervisory control equipment consists of a master control station and four controlled stations. Each controlled station transmits to the master station by telemetering, suction and discharge pressures at the station, the elevation of water in adjacent storage tanks and the system pressure at key points within the sphere of the station. All these functions are telemetered simultaneously over one pair of wires, so that only 4 pairs of wire enter the master control station. In addition, both treatment plants and the control operator will be connected by telephone so that the output from each will be carefully supervised.

It will be possible for the control station operator to start or stop pumps, or to open or close valves over this same pair of wires without interrupting the telemetering signals. This is accomplished by employing different audio frequencies to transmit the telemetering signals, and d-c impulses to control the pumps and valves.

Although the use of single pairs of wires to each station resulted in a more costly system than for a one pair loop connecting all stations, it was felt that it would be safer to separate the control to each station. Telephone company charges for line rental are $4.80 per month per airline mile for the rental of each pair of wires. Distances between control and controlled station vary between 5 miles and 10 miles.

The adoption of centralized control by the Department will prove to be both economically and func-

tionally sound. The ability of one man to scan the conditions existing throughout the distribution system in one glance, with fingertip control of the system at his command, is a very desirable feature. Since the influence of the different pumping stations overlap, low system pressure areas were formerly reflected in more than one station. Because of the lack of coordination between stations, each affected station would start pumps to correct the condition. This made for a sawtooth pressure picture and inefficient operation. The centralized control will eliminate this.

Economically the changeover is very sound. The system is relieving 10 men whose combined annual salary was $36,000 per year while the cost of the equipment was approximately $45,000. Interest and amortization, telephone line rental, salary of a maintenance man and other costs should not exceed $12,000 per year. It is expected that the equipment will be payed for within 2 years.

By MAX GREITZER, Mechanical Engineer, Dept. of Water and Sewers, City of Miami, Fla.

Case 9 — Texas

Safe Air Provided

GOOD VENTILATION is essential for cleaning and repairing any kind of tanks that have contained petroleum products, but the air blowers must be light and free of fire hazard.

Sun Oil Company solved the problem at its Nederland, Texas, terminal with venturi-type, portable air movers. Called the M-S-A Lamb Air-Mover, this comparatively inexpensive device weighs only 31 lb, but when operated on only 60 lb of air pressure, moves as much as 2700 cfm.

The venturi effect is produced when compressed air is expanded at high velocity through an annular orifice and outlet horn. The device has no motors, turbines, fans, or moving parts of any kind.

Before purchase of the air movers from Mine Safety Appliance Co., tank-cleaning crews had to come "topside" frequently for a breath of fresh air.

Case 10 — Texas Oil Plant

Open Steel Flooring Helps Keep Plants Safe

A TEXAS oil plant assures safe walking through use of steel flooring with an open construction that sheds dust, dirt, liquids, oil and water.

Outside walkways and stairs, as well as inside, are fabricated into solid, one-piece units which are easy to install and can be put into service immediately. Grating offers another advantage in that it is easily fabricated to provide openings for columns, pipes, etc.

It also provides a maximum amount of light and air; and, with the Bonderized treatment used by Kerrigan Iron Works corrosion control is assured as well as positive paint adhesion — which means there is little or no maintenance cost.

In addition to the growing use of steel grating, aluminum spark-proof and stainless steel grating are now being used where extreme corrosion conditions prevail in oil, chemical, packing and other industrial plants.

Weldforged Kerrigan steel grating on platforms and stairs, and walkways assure safe walking in any kind of weather for this Texas oil plant.

Case 11 — West Virginia Power Plant

Pump-Packing Maintenance Reduced by Mechanical Seals

DUE TO greatly increased suspended abrasive materials in circulating-water supply, the operating life of our bronze packing sleeves decreased from 24 months to 6 months. In this case, removing the circulating water pump from service required taking a rotating-screen filter plant out of service, and operating 5 sets of twin strainers and 3 smaller pumps.

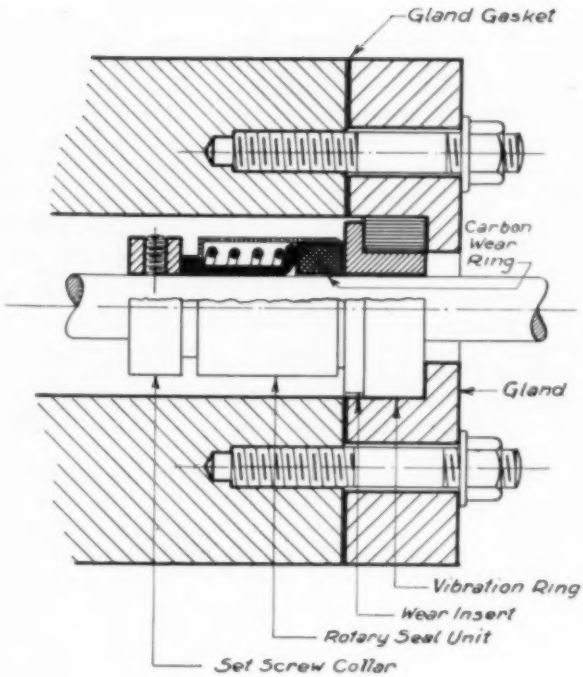
In an effort to reduce the frequency and cost of pump repairs, we tried out two types of mechanical shaft seals and accepted the one illustrated. Relative costs of the "packing-sleeve" repairs and the "mechanical seal" are tabulated.

Operating life of package seals to September 30, 1954, was 18 months. When removed and inspected at time of other pump repairs, the seals were still found in excellent condition.

For the initial installation it is necessary to provide either new or smoothly turned packing sleeves for fitting the mechanical seals. After the first installation of mechanical seals, their replacement will be a much smaller job than with packing sleeves. In either case the pump shaft must be removed and the coupling half removed. However, after the first installation no machine shop work will be required to install a new set of mechanical seals.

Savings are Evident

Based on the life already attained, the pump packing-sleeve repair costs have been reduced from $150 for 18 months to $25 for 18 months. In addition, there has been a saving of $18.24 in matetrial, labor, and operator's time for each of two renewals since the initial machining expense. We have saved the cost of fabric packing and the time necessary



Mechanical Shaft Seal Employed.

	Packing Sleeve (1 Set)	Mechanical Seals (2 Sets)
First Cost	$20.00	$12.84
Installation	$30.00	$12.16
Total Cost	$50.00	$25.00

to adjust and check conventional packing glands. Gland leakage has been practically eliminated thus reducing the drainage of water, giving longer paint life, and a much neater installation.

By R. W. SPEAS, Hydro Plant Supervisor, Kanawha Valley Power Co., Charleston, West Virginia.

Case 12 — Florida

A Tool that Suits the Job

OUR 2-IN-1 press is convenient and saves floor space in the crowded shop. A conventional hydraulic ram that slides between channels may be quickly removed for work elsewhere in the shop or on an outside job. The arbor press mounted on the side had its throat cut and table lowered to admit a wider variety of work.

Since some shafts are threaded on, the warning sign notifies machinists to try unscrewing the shafts before attempting a press push-out that might ruin them.

By HENRY JOSEPHS, Sarasota, Florida.

This job, previously estimated to take from two weeks to a month using other methods, was completed in six days.

Case 13 — Oklahoma

Efficient Roof Raising Job

EIGHT 'Tugit' lever - operated hoists, manufactured by Shaw-Box Crane & Hoist Division of Manning, Maxwell & Moore, Inc., recently completed in six days a roof raising job previously estimated to take from two weeks to a month.

Rapid growth, required additional space in a Tulsa, Oklahoma building. It was decided to add a second floor to the building after raising the roof some 8½ ft and building the walls up to it. Due to the size and weight of the roof, the job appeared difficult and dangerous.

Several contractors were asked to bid on the job and, due to the problems involved, computed it in several ways. One method considered was to subcontract the job to a house mover using jacks and other heavy duty equipment. It was estimated this method would take ten men two weeks to accomplish. The other proposal was complete dismantling of the present roof, salvaging usable material, and building an entirely new roof after the walls were built up to the new height. This would have taken ten men approximately thirty days.

Mr. Charles Beck, superintendent of Curtis Construction Company, and other officials of the company, then conceived the idea of raising the roof with a series of crawler-type chain binders operating on upright I-beams. This method was finally approved and small holes were cut in the roof and the I-beams installed in them on a Monday. An unusual feature was that the beams were not fastened to the floor or otherwise anchored, since the thrust of the roof weight was sufficient to hold them vertical. An attempt to raise the roof with the chain binders was made Tuesday morning, but failed even when 6-foot "cheaters," or handles, were used to multiply the applied leverage.

Monarch Machine Company, Tulsa repair station for 'Tugits' and other "Shaw-Box" equipment, then suggested the use of 2-ton 'Tugits,' a tool-box size lever-operated hoist to do the job. These were tried, with the chain binders operating as safeties. The eight little hoists lifted the roof 8½ ft in only 4½ hours working time and held it there for three days while the walls were bricked up and the mortar dried. The 'Tugits' then lowered the roof six inches to allow it to rest on the walls and be secured to them.

Case 14 — Florida

Incinerator Makes Friends and Money

FOREMOST DAIRIES at Jacksonville, Florida, had been burning their wastes in the open. This bonfire was required to be at some distance from the plant for fire prevention purposes. Even so, bonfire burning in this volume had been occasionally obnoxious to the plant due to wind borne smoke, soot, embers and fly particles. Also neighbors had been complaining. Sometimes the wind blew the debris onto employees' cars. The system was uneconomical and inefficient as well as unsafe. A full time attendant was required while burning waste. Insurance inspectors didn't appreciate the procedure either.

The solution was to install a Brule 1000 lb/hr capacity stationary incinerator and stack adjacent to the building in the most central location for the waste collection. Wastes are now loaded into the incinerator, rather than into a storage pile. They are promptly consumed so that the incinerator can be considered a waste bin without a bottom.

Operation is unnoticeable to employees, and unobjectionable in the neighborhood. The entire plant is now neater and cleaner—papers no longer blow off piles and around the premises.

The incinerator adjacent to the building is entirely safe, being constructed and vented in full compliance with nationally published requirements and recommendations of the National Fire Protective Association, as well as local building codes and insurance regulations. The equipment was supplied and erected by Brule Incinerators.

Case 15 — Louisiana Pipe Coating Plant

Lighting — How Savings Pile Up With Selection of Proper System

A YOUNG Houston, Texas engineer decided recently to switch from a proposed $7,000 lighting system to one that will cost $7,240.

The more expensive installation will produce better lighting — a higher level of illumination and more even distribution of light — but that wasn't what sold Don Holick and Tube-Kote, Inc., for which firm he is chief engineer, on the use of Wide-Lite fixtures and color-corrected mercury vapor lamps. What did sell him is this:

In the first five years of operation, the Wide-Lite installation will save Tube-Kote more than 25 times the difference in installation cost.

Tube-Kote is building a new plant in Harvey, Louisiana, which is near New Orleans. The firm is engaged in plastic-coating pipe for oil field and chemical plant use. The Tube-Kote coatings protect the pipe from corrosion of all types and reduce friction for material moving through the pipes, at least tripling the life of the pipe in most cases.

This process requires a large, well-lighted working area. The new Harvey, Louisiana, plant will be 90 ft wide and 200 ft long. It will require 24-hour lighting. Mr. Holick first drafted plans for an incandescent system using 62, 300-watt reflector lamps in ordinary reflectors. His estimators said the system would cost $7,000. Then, he began to investigate Wide-Lite manufactured by Wilson Electrical Equipment Co. of Houston and distributed nationally by Graybar Electric Company and selected independent wholesalers.

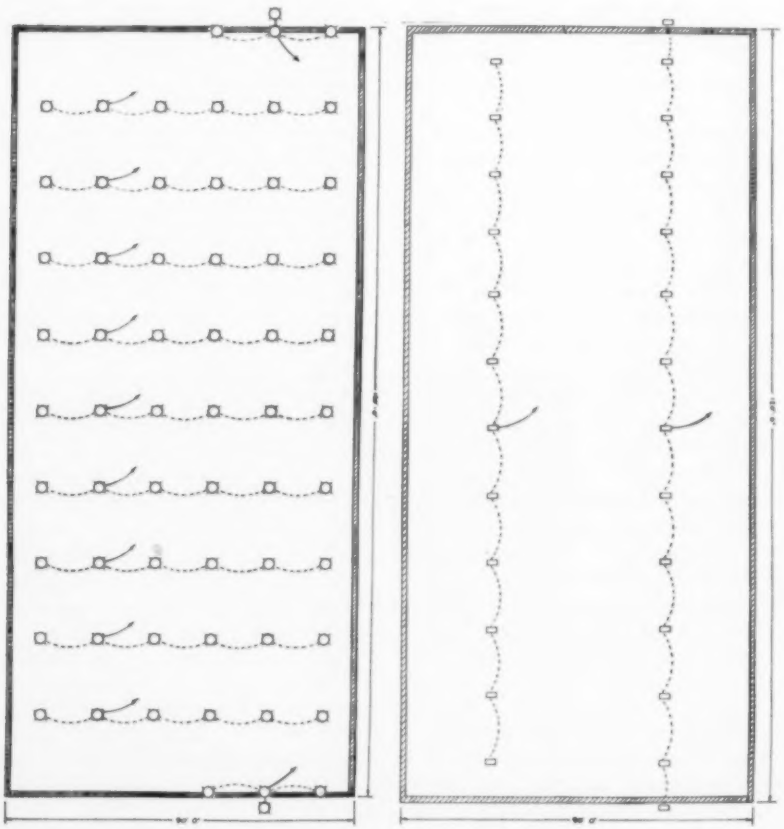
Wide-Lite is the first lamp housing line designed especially for use with color-corrected mercury vapor lamps. The rectangular housings have reflectors designed to deliver maximum light around the mercury vapor lamp. The color-correcting coating in the lamp, which eliminates the color distortion of mercury vapor light, prevents efficient use of ordinary reflectors.

This Wide-Lite fixture, completely sealed against weather and foreign matter, will be used in 18 of the 26 light sources planned by Tube-Kote at its Harvey, Louisiana, plant. A heat-resistant lense protects the light and the reflector from foreign matter. The finned aluminum housing keeps the lamp burning at the most desirable temperature. Lamp replacement is through the base of the housing, so that the lense need never be removed.

Cost Data

Mr. Holick found he could light the New Orleans plant with 26, 445-watt Wide-Lites better than with 62, 300-watt incandescent bulbs. The total connected load with Wide-Lite would be 11.6 kilowatts as compared with 18.6 with incandescent.

The initial lumens rating of the Wide-Lite installation would be



Incandescent lighting plan (left) first drawn for Tube-Kote's Louisiana plant, would have used 62, 300-watt incandescent lamps at 120 v.

Sketch at the right depicts the plant as lighted with 26 Wide-Lite fixtures at 460 v. Comparison with the incandescent lighting plan makes evident the reduction in initial wiring and electrical equipment cost.

LIGHTING & ANALYSIS
TUBE-KOTE PLANT NUMBER 4
Harvey, Louisiana

LIGHTING & ANALYSIS for TUBE-KOTE'S LOUISIANA PLANT

Conventional Incandescent		Wide-Lite Mercury Vapor
62	Number of Fixtures	26
$7,000	Installation Cost	$7,240
300	Total Watts Per Fixture	445
18.6 KW	Total Connected Load	11.6 KW
3,300	Initial Lumens Per Unit	20,000
2,000	Rated Lamp Life Hours For Installation	12,000

20,000 per unit as compared with 3,300 per unit in the other plan, and the mercury vapor lamps would have a rated life in the Tube-Kote installation of 12,000 hours as compared to 2,000 for the incandescent fixtures.

Mr. Holick's estimators said the Wide-Lite installation would cost $7,240, or $240 more than for the incandescent system.

Savings Pile Up

Electricity: Assuming a rate of 2 cents per kilowatt hour with 7 kilowatts less connected load, the Wide-Lite installation will operate 14 cents per hour cheaper. With a 24-hour operation during 260 working days per year, the Wide-Lite installation will save $873.60 per year on electricity alone.

Lamp Replacement: With lamp life rated at 2,000 hours, incandescent lamp replacement was figured at 3-plus per year, or more than 186 new lamps each year to keep the installation in operation. Estimating labor at $1 per lamp change and the lamp cost conservatively at $3 per lamp, this would mean an annual replacement cost of more than $664 for the incandescent system.

One replacement of all Wide-Lite lamps would cost $598, using the same labor cost figure and established mercury vapor lamp prices. While mercury vapor lamp life is rated at 6,000 hours, this is based on frequent on-and-off operation, with approximately 5 hours of burn allowed for each start. With 24-hour operation such as is required by Tube-Kote, the mercury vapor lamp is good for more than 12,000 hours or 2 years of operation in the Tube-Kote installation. This would mean one change every two years or, for the purpose of comparison, one-half of a change per year, placing annual Wide-Lite lamp replacement cost at $229 or $365 less than for the incandescent system.

This saving of $1,238.60 per year — $365 for lamp replacement and $873.60 for electricity — was enough to convince Mr. Holick of the economy of spending $240 more for original installation. He did not reduce to dollars and cents the benefits of mass lamp replacement, which is practical and economical with mercury vapor lamps, and of the more efficient lighting he will receive from Wide-Lite.

When a $240 investment will return a saving of more than $6,000 in five years, one can afford to leave the details to work themselves out.

Case 16 — Virginia

Air Power Tools Raise Efficiency

A VIRGINIA paper mill has doubled efficiency and saves $10.00 a day since utilizing air power to charge the paper digesters. Here's how:

Two men handling three wood chip supply hoppers charge 10 pulp digesters approximately 4 times a day each, or a total of 40 daily chargings. Before air equipment was installed, the men had to use a 4 ft hand wrench to loosen twelve 2¾" nuts from bolts holding down each digester cap. The bolts were then swung out of place, and the digester cap lifted off, using a hand chain fall. The chip supply hopper was pushed along the overhead monorail to the digester. The men waited or performed other jobs while the digester was being charged. Then the digester cap was replaced. At each charging, it took the two workmen ten minutes to remove and replace the digester cap, and bring up and remove the chip hopper, or 1/3 man-hour. Doing this 40 times a day took 400 minutes or 13 1/3 man-hours. At the wage rate of $1.50 per hour, the daily charging cost was $20.00.

Air Power Technique

When an Ingersoll-Rand Size RC-10 Air Bloc Hoist was mounted on each of the 3 supply hoppers, and five Ingersoll-Rand Size 534 Air Impactools were installed to remove the nuts on the digester caps, the time to service a digester was cut in half. (One Impactool was placed between every two digesters for convenience.) It now takes only 5 minutes for the two men to do the job. As the first operator pushes the hopper with the Air Bloc Hoist to the digester, the second operator quickly loosens the nuts with the Impactool and swings the bolts out of place. The first workman lifts the digester cap with the Air Bloc, at the same time aligning the chip supply hopper. The order of procedure is reversed after the digester is charged.

Because the time is cut in half, the company saves $10.00 a day.

Doe Run plant (Brandenburg, Ky.) of Olin Mathieson Chemical Corporation makes ethylene oxide, ethylene glycol and related chemicals from natural gas hydrocarbons.

Case 17 — Kentucky Chemical Plant

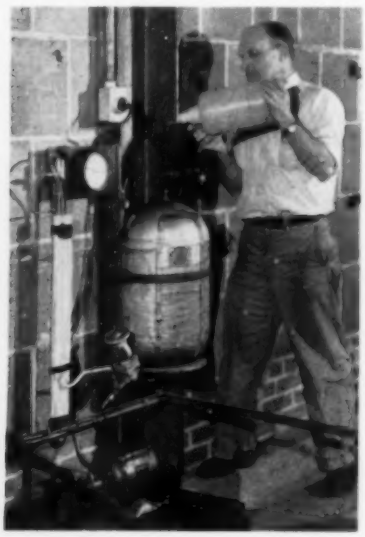
Switch From Sulphite to Hydrazine Offers Steam Production Economies

MORE EFFICIENT boiler operation as well as direct savings in cost of chemical treatment of the boiler feedwater were achieved at the Brandenburg, Ky., plant of Olin Mathieson Chemical Corporation when hydrazine was used in place of sodium sulphite as an oxygen scavenger.

The steam generating system at this petrochemical plant consists of three 80,000 lb/hr boilers supplying 650 psig steam at 750 F from feedwater having a temperature of 235 F. The average steam demand during the winter months is 207,000 lb/hr. This is reduced to 190,000 lb/hr in warm weather.

Make-up, which is raw water from deep wells, varies from 40% to 60%. External treatment includes a hot process lime softener, filters and styrene-zeolite softeners. In this way hardness is reduced almost to zero.

In May, 1954, the use of catalyzed sodium sulphite, which had been applied as an oxygen scavenger since the plant started operation in 1951, was replaced by hydrazine solution. At first the hydrazine was applied by adding continuously to the feedwater 0.5 ppm. N_2H_4 as a dilute solution. It developed, after frequent checks of the oxygen content of the feedwater while gradually reducing the hydrazine feed, that it required less than 0.1 ppm of hydrazine to maintain oxygen-free water.



Adding Scav-Ox (35% hydrazine solution) to water in chemical feed tank. Dilute solution from this tank is fed continuously to boiler by means of chemical proportioning pump shown just below tank. Solution is introduced at a point between the outlet of the deaerator and intake of the boiler feedwater storage tank.

Critical inspection of two of the boilers was made after 3500 and 3800 hours of continuous operation with hydrazine treatment. The exposed metal surface above the steam drum water level received special attention. No oxide pitting or corrosion was found.

Advantages & Results

Material found inside the mud drum after 3800 hours' operation consisted of a small deposit of soft non-magnetic powder. The entire boiler yielded only one quart of this powder, and the tubes looked clean.

The following advantages were

Editor's Note — Hydrazine has found limited application in boiler feedwater treatment for several years, but handling precautions necessitated by its flammability have confined its use principally to large consumers such as generating stations. Successful use at Duke Power Company was reported in SPI for December, 1955, pages 46-47.

Scav-Ox, a new non-flammable form of hydrazine (35% solution of hydrazine in water), has been recently marketed by Olin Mathieson Chemical Corporation. It has no flash point and no fire point, yet retains all of the advantages of hydrazine as an oxygen scavenger and corrosion inhibitor. Development makes possible use of the chemical in low pressure heating boilers.

observed as a result of the change from sodium sulphite to hydrazine at this plant:

1. **Boilers remain cleaner,** less scale-forming sludge is deposited, and more efficient boiler operation is achieved through better heat transfer. This is because hydrazine stops corrosion due to dissolved oxygen, and does not add solids to the boiler water.

2. **A direct saving in chemical cost** of more than $200.00 per year was realized. Treating 4,600,000 lbs of feedwater daily, the plant now uses 76 lbs of hydrazine, or 25.4 gallons of Scav-Ox (35% hydrazine solution), a year.

3. **Storage space was saved.** The same job previously done with sulphite had required handling and storing of 3,650 lbs of the solid chemical a year. Storage space required was reduced to about 1/30 that required for sulphite.

4. **Dirt, dust** and broken paper bags are **eliminated,** since the hydrazine solution comes in steel drums.

Case 18 — Alabama Lumber Company

Uniform Steam Pressure With Automatic Controls

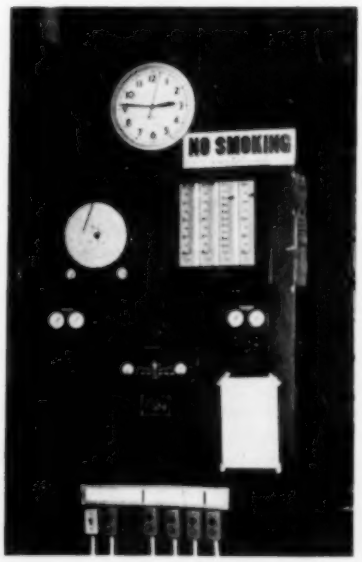
EQUIPPING its mill boiler with automatic feedwater and combustion controls has provided the M. W. Smith Lumber Company, Jackson, Alabama, with a more dependable and uniform source of steam for operating its lumber-mill machinery. The company produces from 70,000 to 75,000 board feet of lumber per shift consisting of boards, molding and yellow-pine timbers. Steam is used to drive the mill machinery and for kiln drying.

Operating Problem

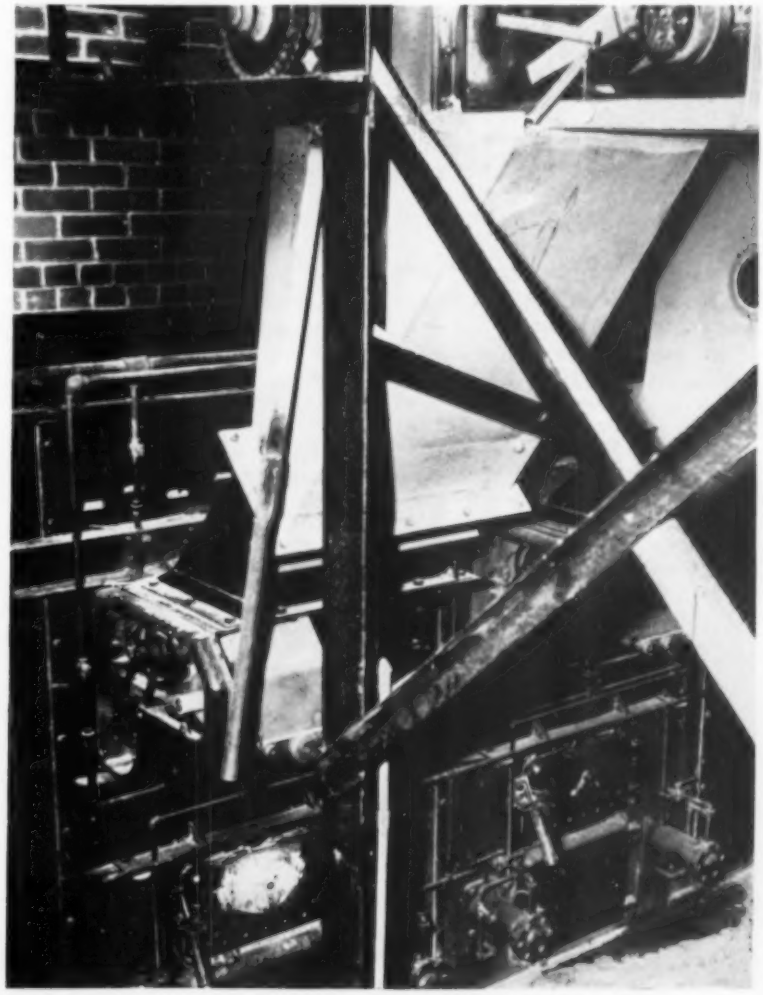
Previous manual operation of the boiler was extremely unsatisfactory, because it was impossible to maintain a uniform steam pressure with the erratic mill load. And, the high moisture content of the fuel aggravated the situation: most of the fuel consists of wet shavings and sawdust, only a part of which comes from kiln dried lumber.

To alleviate this condition, M. W. Smith installed a Copes-Vulcan "package" consisting of combustion control, Flowmatic Type D-O feedwater control and Vulcan P-3 rotary soot blowers, all manufac-

Boiler control panel containing steam-flow recorder, draft gauges and combustion control.



Shavings and sawdust are delivered by conveyor to the two stoker hoppers. The fuel feeders are regulated by the combustion control.



tured by Copes-Vulcan Division, Blaw-Knox Company, Erie, Pa. The boiler — a Combustion Engineering, Type VU-10-16A unit rated at 35,000 lb/hr at 250 psig pressure — is elevated 8 ft, and sits on a modified dutch-oven furnace. Fuel is fired on a C-E spreader stoker equipped with power dump grates. Both forced and induced draft are used, and the combustion air is preheated. Feedwater make-up, 100%, is heated to 220 F in a Graver spray type heater.

Since installing the control "package," the plant has had no more trouble with low steam pressure or dangerous water-lever conditions, and the mill production has increased because of the more continuous uniformity in mill machinery speed. Except for necessary manual changes in the air-fuel ratio to balance moisture content of the fuel, the combustion control regulates the firing rate automatically according to steam flow.

Steam-pressure variation is negligible. On one occasion when a 3-in. line was inadvertently opened, the boiler maintained constant pressure until the shut-off valve could be closed, and no production was lost because of the accident. According to Mr. R. J. Bryan, power engineer, the more closely regulated flow of feedwater and a firing rate based on steam flow, which causes the boiler to follow steam-flow changes automatically, provide a steadiness in steam pressure unattainable with manual control.

Case 19 — North Carolina Waste Control

Trailer-Borne Instruments Check Waste Effluents

AUTOMATIC recorders in specially designed trailers rove from plant to plant in the City of Charlotte, N. C., keeping a watchful eye on industrial wastes being discharged into sewer mains. The city's Water Department has two such trailers equipped to make 24-hour tests of plant effluents by continuous measurement of pH flow rate and total volume of flow.

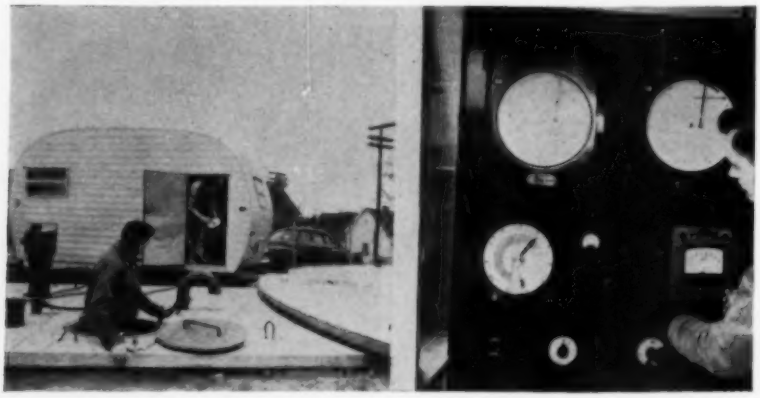
This mobile equipment includes one of the first installations of a new compact pH recorder manufactured by Leeds and Northrup Company of Philadelphia.

City regulations require that each plant discharging over 40,000 gallons a day have its effluent checked every 90 days. In addition, regardless of quantities involved, any corrosive mixtures detected at disposal plants have to be traced to their source and responsible plants notified. This test work has to be done for over 60 manufacturing plants with some 500 miles of sewer lines spread over an area of about 45 square miles.

Excessive acidity or alkalinity in large volume discharges creates severe problems. It will badly corrode sewer mains, adding greatly to maintenance costs. Overtaxed treatment facilities can result in dangerous pollution of fishing and bathing facilities. Sludge from treated sewage, sold for soil enrichment, can be spoiled.

By former manual sampling and checking methods, the city's Industrial Waste engineers faced a burdensome and time consuming task. Furthermore, continued industrialization in the Charlotte area promised to intensify the work. The mobile trailers with automatic recorders were adopted to speed the checking job with a minimum of manpower.

Charlotte's trailer is parked near waste outlet line from an industrial plant. Panelboard inside the trailer contains low and high range flow recorders (top) and L&N pH recorder at bottom left. Instrument at bottom right is L&N pH indicator which measures pH and sends electrical measuring signal to the recorder.



Equipment Used

Use of automatic recorders in the trailers permits the 24-hour test to be conducted without the need for constant supervision. Once the proper instrument connections are made for measurements at the plant effluent line, the pen of the L&N Speedomax H recorder continuously plots the pH value of the waste on its paper chart. At the same time, one of the two Hagan flow meters charts the rate of flow — one meter being used for lower flow rates and the other for higher flow rates. An integrating device on each flow meter shows the total volume of flow for the test period.

Time markings on the charts tie in accurately recorded values with the exact time of day. With the information provided by the recorders, the city's engineers can check at a glance whether or not the plant waste is near enough to being harmless. Plants that discharge over 40,000 gallons of waste a day are required to install holding tanks from which the waste can be released at acceptable rates into the city's mains.

Case 20 — Alabama

Novel Conveyor Drive

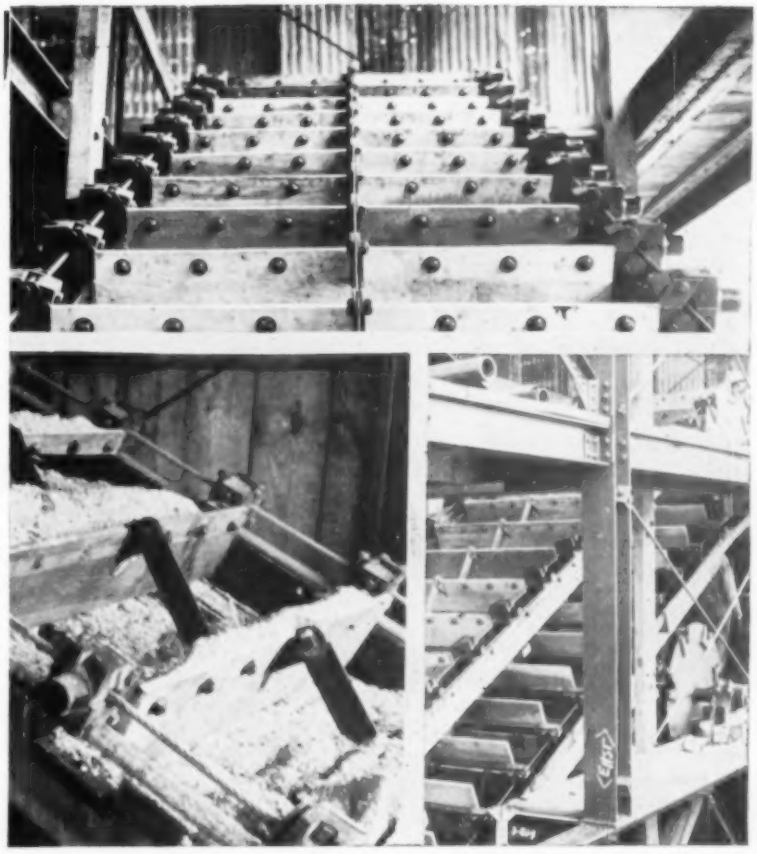
THE CONVENTIONAL sawmill wood refuse conveyor employs a single center chain to which wooden slats are bolted and arranged to glide in a trough.

An improvement was developed for one southern mill whereby the chain is replaced by two flexible steel cables, fitted with novel flight attachments which also serve to propel the conveyor by engaging a special driving sprocket.

Developers of this new conveyor claim easier loading and unloading, and greater capacity than chain driven conveyors of comparable dimensions. A disadvantage mentioned is the possible stretching of the cables of long conveyors, causing misalignment of flights.

Outward projections on the flight attachments are arranged to engage recesses, or sprockets, in the driving drum. The drum is usually provided with seven attachment recesses.

The accompanying photographs show the flights, cables, cable attachments and driving drums.



The upper view shows a section of flights and attachments. At lower left is a detail of a loaded flight. The driving drums are visible in upper and lower right-hand corners of the general view.

Case 21 — Cement Plant

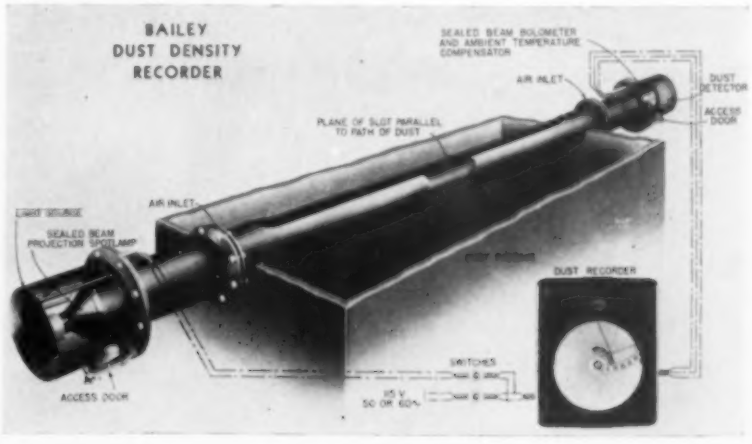
Dust Density Recorder

AFTER installing seven dust precipitators to clean flue gases from rotary kilns, a southern cement manufacturer needed both a means of checking their efficiencies and a permanent record of precipitator performances.

A Bailey Dust Density Recorder was installed, consisting of: (1) a sealed beam spot lamp which projects light through the dust; (2) a sealed beam bolometer, or total radiation detector, to detect the amount of light which the dust allows to pass; and (3) a receiver recorder.

Recorder charts provided 24-hour-a-day records of precipitator performance, from which it has been possible to:

1. Determine which precipitators were not functioning properly.
2. Show that best results were obtained with a 25-minute automatic rapping cycle to clean precipitators.
3. Continuously observe and correct dust density in flue gases.
4. Improve community relations by voluntary dust control program.



Case 22 — Alabama Paper Mill

Better Process Water

THE Gulf States Paper Company, Tuscaloosa, Alabama manufactures a high grade of white paper. They had been using the Black Warrior River as their source of process water.

However, whenever a rainstorm would cause a change in water composition, they found it difficult to maintain paper quality and consistently get a high grade of white paper from their bleach plant.

After careful consideration and study it was decided to purchase two 83 ft diameter Graver Reactivators to treat the process water before it entered the plant. These units *each* handle 6,950 gallons per minute of water and are designed to remove any color and/or turbidity in the water.

The Reactivator operates on the principle of recirculating performed floc with incoming water and chemicals. This slurry is then circulated and the sludge falls to the bottom while the clear water rises to the outlet.

Special design features which help accomplish this separation are a continually increasing rising area which causes a decrease in particle speed and better separation. Further advantages include separately driven sludge scraper and recirculator and controlled sludge recirculation, low sludge level for better recirculation and sludge removal over the entire bottom area.

The Gulf States Paper Company have recently ordered two 88′ diameter Graver Reactivators for their Demopolis, Alabama plant to handle a similar problem.

Case 23 — North Carolina Laundry

Stoker Burns Wood Refuse

SAWDUST, wood chips, hogged wood and other wood wastes, while long considered usable fuel, have not generally been utilized economically. Wood working industries, with a surplus of wood waste, can supply much of the fuel needed by the smaller boilers in their vicinity at practically no cost, if the boiler operators are willing to burn it. There is no question that it can be burned, and burned efficiently, in the average furnace with a few modifications and adequate stoker equipment.

A typical example of this is at the High Point Laundry, High Point, North Carolina, where a standard 200 horsepower H.R.T. boiler was formerly hand-fired with coal and wood refuse and is now equipped with a Fyr-Feeder automatic multi-burner combustion system manufactured by the American Coal Burner & Wood Stoker Corporation.

Best proof of the results attained thru the use of this System of burning sawdust and wood chips can be found in the following statement by Mr. P. G. Wilson, Manager of the High Point Laundry: "We have saved more than $3,226.95 in the first six months of operation. Besides, we have experienced a constant steam pressure which has helped production."

More Information Available

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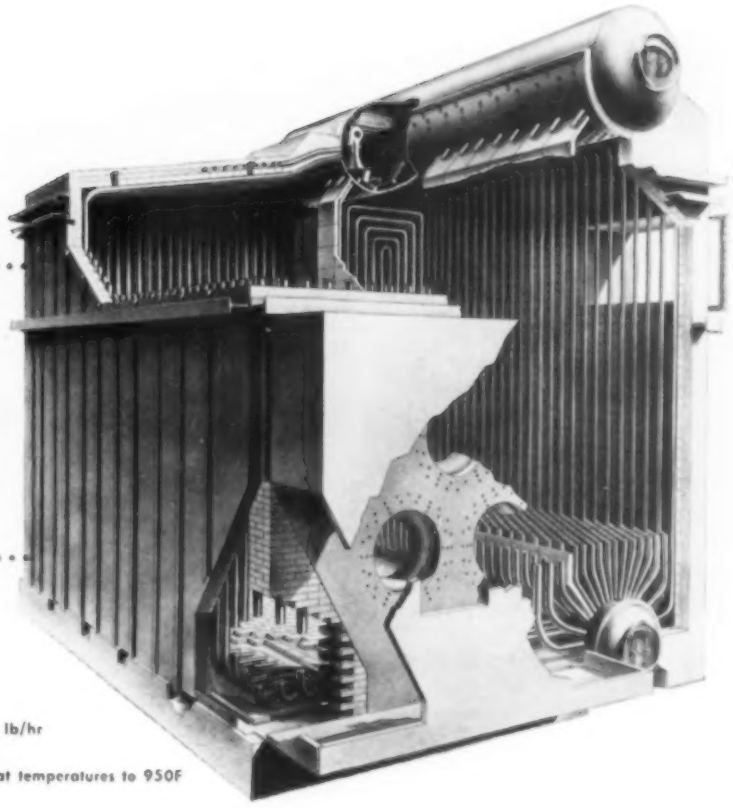
TO HELP you put these ideas and methods to work, equipment manufacturers have been identified in most cases. If additional information is desired, contact your local mill supply house, manufacturers representative, the equipment manufacturer, or drop a note to SPI, 806 Peachtree St., N.E., Atlanta 8, Georgia. There is no obligation.

Series "SC" STANDARD Steam Generator



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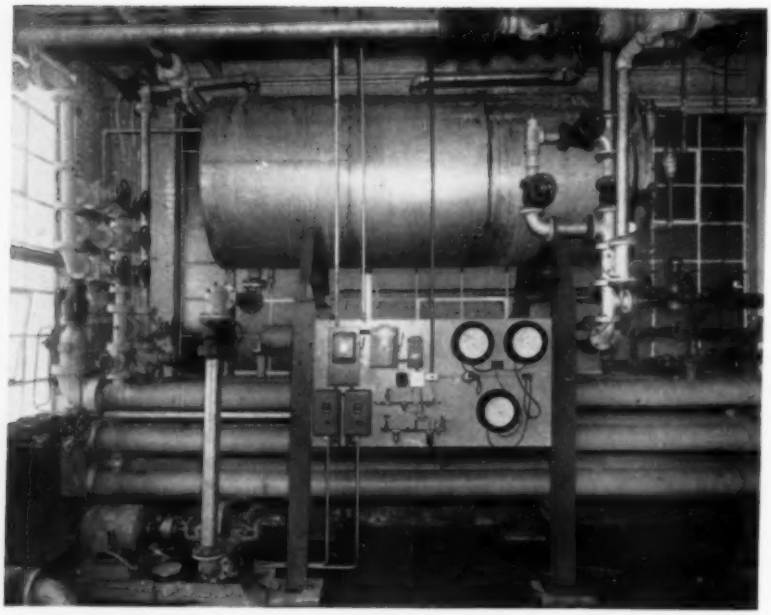


Heat recovery system of Copland Converting and Finishing Company, Burlington, N. C.

Case 24 — North Carolina Finishing Plant

Heat Recovery Saves $11,000 Per Year

A NORTH Carolina Texile finishing plant desired to reduce operating costs by shortening the work week and cutting fuel consumption. They were working 99 hours a week. The plant started all operations in cold water which was raised to 200 F with live steam injection.

Both a Bready system of heat recovery and an open cycle hot water system were installed to permit the economies and corrections desired. The unit was guaranteed to raise the temperature of 12,000 gph from 60 F to 140 F when 15,000 gph of waste water passed through at 150 F. Starting temperatures on 40% of the lots would be at 140 F, the others starting with blended water at 110 F.

Results were accomplished as guaranteed. The open cycle hot water system reduced operational time 30 to 35% compared with the previous steam injection method. More condensate was then recovered for boiler feed. Important savings were realized by reducing payroll to a 40 hour week. The 80 degree rise achieved by the heat recovery system was equivalent to 240 bhp, and with steam costing 63c per thousand pounds, this totalled $11,000 per year.

Bready systems of heat recovery and Bready systems of hot water heating are manufactured by the Ludell Manufacturing Company.

Case 25 — Georgia

Fluid Coupling Cuts Maintenance

AS IN MOST woodyard operations motors, starters, couplings, reducers, chains, and sprockets received severe punishment at a Georgia pulp and paper mill until a Twin Disc 14.5 HMR Fluid Coupling and Thomas Flexible Coupling were installed between the 50 hp motor and the 33 to 1 ratio speed reducer as shown in the photograph.

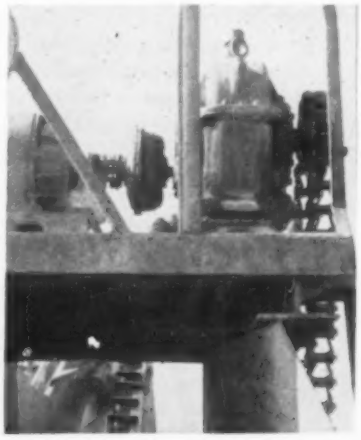
Before installation of this fluid coupling was made, the constant jogging, necessitated by extremely heavy starting loads, often burned up contacts during a single eight hour shift. And there were occasions when jogging failed to start the load, necessitating partial unloading of the conveyor manually. The resultant downtime from these causes was high and only eight months to one year life being obtained from the best motor windings. Additional maintenance and downtime resulting from failures at various points in the power transmitting equipment due to the continuous heavy shocks also increased production costs.

The Remedy

A careful study was made by R. L. Fulghum Company of Atlanta before supplying the Twin-Disc Fluid Coupling. Running load was 50 hp. The average running period was 5 minutes and the stopped period, between runs, 2 minutes. Operation was 24 hours per day, seven days a week. Amperage drawn while starting averaged about 450% of normal running current, with acceleration requiring several seconds.

With this information accumulated, an effort was made to select a fluid coupling which would utilize the maximum torque available from the motor to start any possible load without excessive shock and at the same time handle the normal running load without excessive slip.

That these objectives have been accomplished is evident after al-



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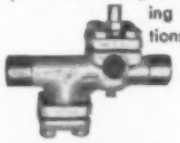

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most three years of operation. It has not been necessary to unload the conveyor in order to start it. There has been no overheating of the fluid coupling, and no oil loss. Jogging is eliminated, and starter contact life is normal. Average starting current draw is less than 350% of running current, and acceleration is faster. There has been no maintenance on motor, fluid coupling, flexible coupling or reducer and there has been no downtime chargeable to the power transmission equipment of the conveyor.

In addition to the accomplishment of these things it is believed that carrier chain breakage has been reduced also, because of the softness with which the power is applied through the fluid unit.

Case 26 — Chemical Company

One-Man Recovery System

A SINGLE operator uses a Sauerman storage machine to recover material from all sections of the 500 ft warehouse at International Minerals & Chemical Corporation's Carlsbad plant. The remotely controlled DragScraper feeds either of two hoppers which deliver the potash to the tunnel conveyor system.

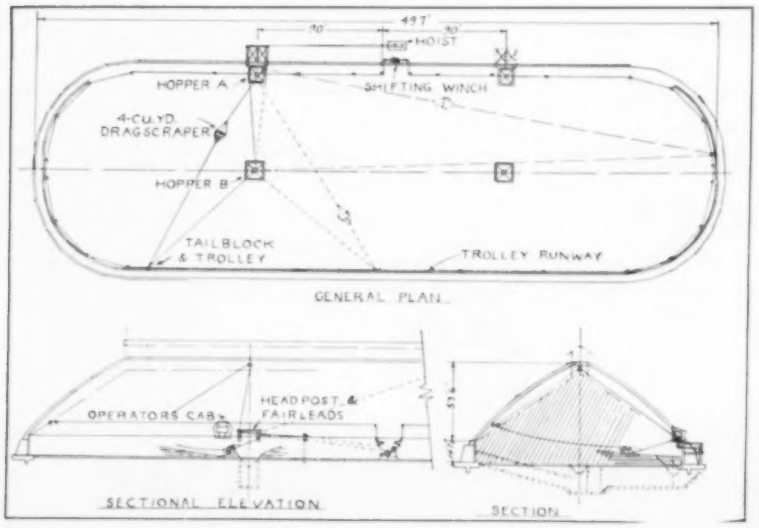
The 4-cu yd machine reclaims material at 280 tph when operating on the average haul distance of the building. Operating costs are estimated to be about 2.1 cents per ton. This includes labor, maintenance and power costs.

All operating machinery, the hoist, shifting winch and motors are housed outside of the warehouse, away from the corrosive potash. Only the steel scraper bucket and cables contact the material. No heavy machinery or personnel are needed on the 100,000 ton storage floor.

Operating cables lead from the hoist drums, through fairlead blocks supported on steel headframes into the warehouse. A monorail trolley carrying the tail block of the DragScraper machine runs along the perimeter of the building. The trolley is relocated by means of a shifting winch and provides for lateral movement of the scraper.

The operator controls all movements of the scraper from either of two cabs which are strategically located to give good visibility over the recovery area.

Material is conveyed to the warehouse by an elevated conveyor and shuttle conveyor. The design of the building conforms to the natural angle of repose of the stored material.



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Case 27 — Texas

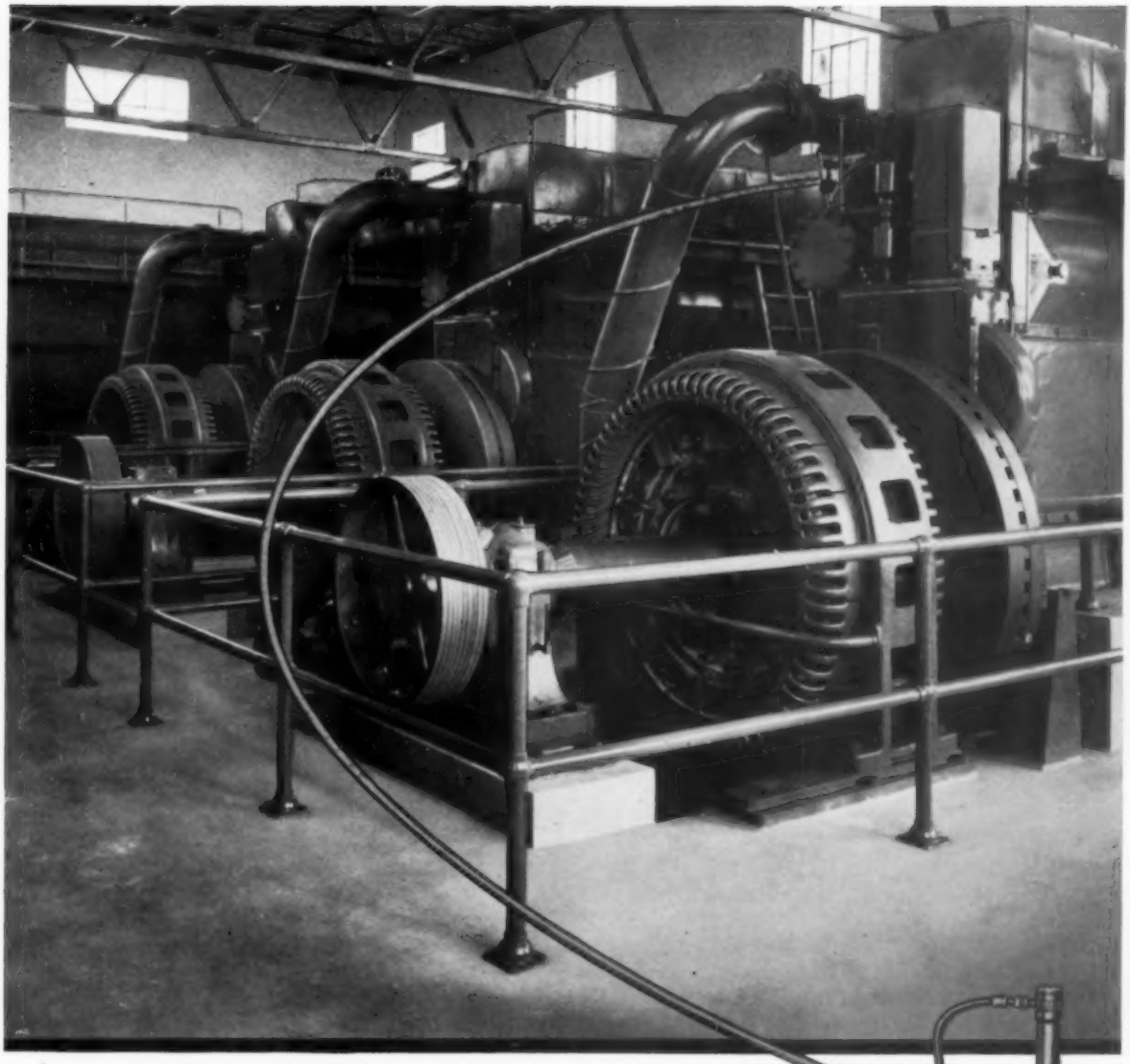
Outside Air Cooling

WHENEVER the internal heat load of a plant is high compared to the summer heat gain through walls and roof, the possibility exists that cooling will be required even when outside air temperature is below the temperature desired indoors. The entire refrigeration system (other than air unit fans) can then be turned off and outside air used for cooling.

On a strictly **temperature control system**, an outdoor thermostat shielded from the sun can turn off the plant and the proper temperature can be maintained indoors by providing dampers in the outside air intake and the return air duct. These dampers should be linked together and controlled by a modulating motor in response to the room thermostat.

The quantity of outside air will then vary between the summer minimum ventilation setting and that needed during cool weather to maintain room temperature. The excess outside air during cool weather can be discharged from the plant through automatic (gravity) dampers. This discharge may be directly outdoors or may be directed through non-conditioned plant areas and thence outdoors.

In the latter case, the quantity



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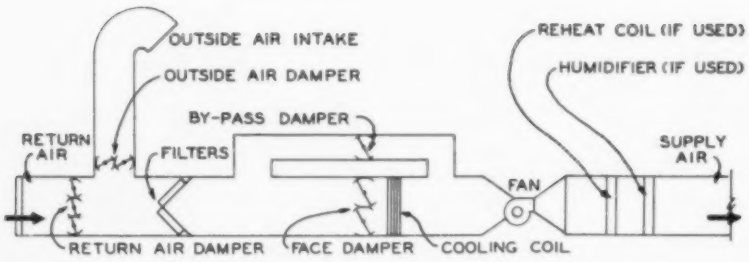


of air through the non-conditioned space will generally be large enough to reduce heating loads therein and provide "free" ventilation of same. In fact, if a few degrees lower temperature can be tolerated in the non-conditioned space and it is of sufficiently small area, no heat at all may be required therein.

The outside air quantity will be at a maximum under full plant operation at a temperature immediately below refrigeration plant shutoff, and will automatically reduce towards the minimum setting as outdoor air temperature drops. If the minimum setting required for ventilation is still such that plant temperature drops too low, then heat can be added in the air unit by any conventional manner. The heating medium should be triggered by an end switch on the air dampers and controlled by the room thermostat.

If the plant is **on both temperature and humidity control**, the dehumidification requirements will likely be such that the refrigeration plant must run until the moisture content of the outside air is equal to or below that required to remove plant moisture.

In such case, the refrigeration plant can be turned off by an outdoor thermostat set at the lowest required air unit dew point rather than at plant dry bulb temperature. The modulating action of the outside air and return air dampers will be the same as for a strictly temperature control system except that they will now be controlled to maintain a fixed air temperature just past the cooling coil. The room thermostat will continue to control the reheat coil and the room humidistat the humidifier, just as when the refrigerating plant is operating.

If the plant is on **"Percent Process Control"** (See Sept. '56 S.P.I.—P. 58), the portion of the control adjusting outside air quantity must be closed whenever the temperature is such that the refrigerating plant is off. This can be done simply with an automatic relay. Naturally this will apply only on a temperature and humidity control job, since "P.P.C." is never required for temperature control alone.

By JOHN A. WEBER, Consulting Engineer, Austin, Texas.

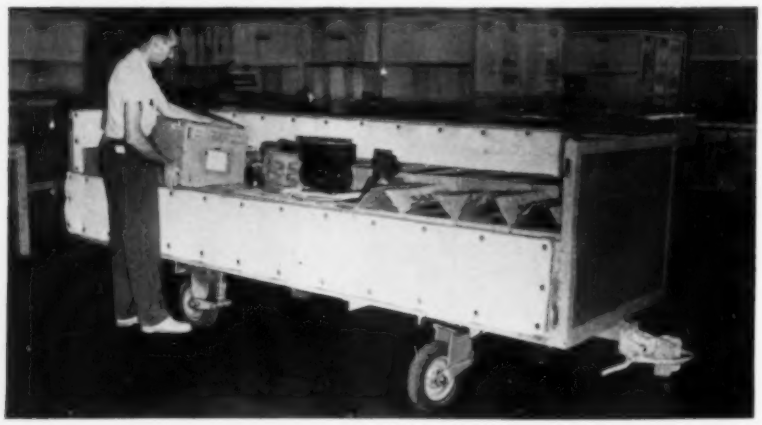
Case 28 — Georgia Aircraft Plant

Fragile Instruments Moved Safely

THE SAFE transport of electronic instruments through the huge Lockheed (Georgia) operated Government Aircraft Plant No. 6, created a problem in materials handling.

A truck was needed to move the material without damage to the airplanes' electronic equipment. In order to facilitate their movement and carry the load safely through the production locations and inspection stations, the transportation department of Lockheed decided upon a foam-rubber lined truck mounted on spring cushion casters equipped with pneumatic wheels.

The 30 electronic equipment gondolas, or trucks, in use at the Lockheed Georgia plant are lined with 1" foam-rubber and the bodies are mounted on swivel and rigid double action spring casters manufactured by Faultless Caster Corp. To obtain additional cushioning, the casters were specified with puncture-proof pneumatic, cushion tires. The caster is designed so that the wheel is in constant contact with the roadway or floor surface — the double action spring absorbs the bounce, so the truck doesn't rise when mounting obstacles, or drop when depressions or holes are in the line of travel.



The electronic equipment gondola is constructed of wood with angle iron frame — 10' x 4' x 4'. A ten foot long hinged half-door provides accessibility in loading and unloading the trucks. The interior foam-rubber is completely covered with canvas to reduce wear on the inner cushioning. A trailer hitch extends to the front of the truck so that several of the gondolas may be transported train fashion.

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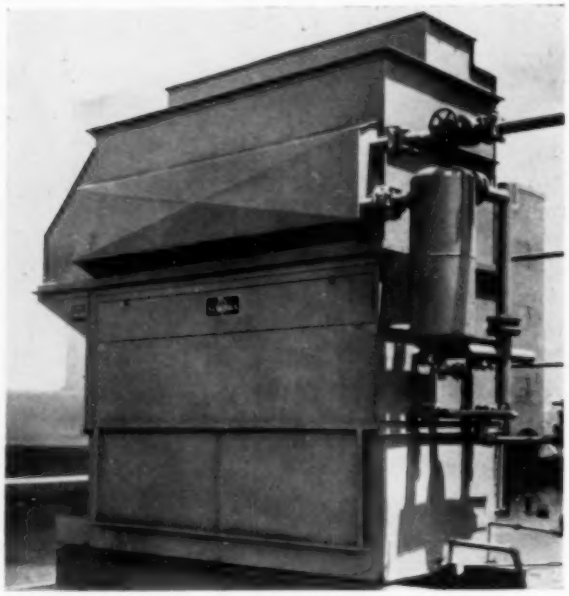
Case 29 — Florida

High Performance Condensers

DURING THE late fall of 1953 Fruit Industries, Inc., of Bradenton, Florida installed 2 new Niagara Blower Company ammonia condensers. Condensers included as standard design the dry coil feature for removal of superheat, and built-in oilout trap. These features retard scaling and fouling of the wetted coil surfaces and also remove excess refrigerant oil from the system, resulting in sustained efficiency or high capacity output.

In a recent changeover of refrigerating equipment in 1956 it was necessary for a period of a few weeks to operate these condensers considerably above rated capacity. Even though these condensers were rated at 75 tons each, they actually handled 125 tons each and kept the refrigerating plant in operation until additional condensers could be installed.



Case 30 — Alabama Soil Pipe Plant

Better Trapping

RUDSILL Foundry Company, at Anniston, Alabama, has a unique system for tar-coating cast iron soil pipe.

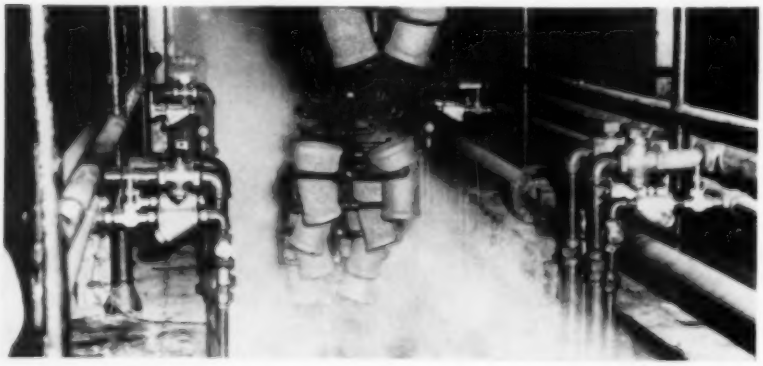
It can be described as a continuous dipping system using a heated tar bath to give a coating superior to that produced where pipes are heated and then dipped.

Originally the heating system for this tar bath employed four banks of pipe coils, trapped by old type traps. Production was hindered by a variety of troubles, not the least of which was the time required to bring the bath up to operating temperature.

For instance, at the north end of the vat it took 4 hours and 45 min. to effect a 30° temperature rise.

Then they installed a new heating system — Platecoils equipped with 36 Yarway Impulse Steam Traps, and now they are having no difficulty getting and maintaining the temperature they need. At the same north end position, temperature charts show they get approximately the same 30° temperature rise in only 3 hours and 10 min.

Most important is the fact that they have now been able to step up their casting tonnage from 90 to 125 tons per 8 hours . . . and the coating vat is now carrying about 35% additional load.



Case 31 — Texas Laundry

Fuel Consumption Cut

THE PROGRESS Laundry in Dallas, Texas found they were producing their steam and hot water in an uneconomical manner.

Mr. Dave Wallace, owner of the plant presented the problem to J. P. Philibert, Distributor of Continental Automatic Boilers in Fort Worth, Texas, who, with the H. C. Lohman Machinery Co. of Dallas, conducted a survey of the requirements. Their solution resulted in the installation of a 150 hp Continental Automatic Boiler.

Round figures from fuel records show a reduction in gas consumption from about 1,300,000 cu ft per month to 840,000 cu ft per month. This means a money saving of about $200.00 per month.

The Continental boiler, manufactured by Boiler Engineering & Supply Co., Inc., is widely used in the cleaning and laundry field, being particularly adapted to its requirements. It is a self-contained automatic steam generator of horizontal fire tube two-pass design. It is recommended for high or low pressure, oil-gas or combination firing, ranging from 20 hp to 500 hp and with a guaranteed efficiency of better than 80%.

Here's why Wrought Iron Pipe serves longer at lower cost-per-year

Wrought iron pipe's longer life comes from its unique composition and structure. It is a two-component metal . . . high purity iron and glasslike iron silicate. The iron silicate is distributed throughout the iron in the form of threads or fibers. There are more than 250,000 fibers per sectional square inch.

These same fibers, illustrated in the magnified section above, give wrought iron its built-in protection against corrosion. When corrosion attacks, the network of these defensive fibers quickly arrests pitting and rapid penetration. As a result, corrosion is forced to spread out over the entire surface instead of penetrating the pipe wall, as happens in other materials. This effective safeguard against corrosion means that wrought iron pipe lasts longer at lower cost-per-year.

Service records in a variety of installations support this longer-life reputation of wrought iron pipe. Some of the applications where wrought iron is serving and saving are: heating system piping; air conditioning and refrigeration piping; water supply piping; sanitary system piping; sewage plant services; electrical conduit.

More of this story, and why you can use wrought iron pipe with confidence, is told in our booklet, *The ABC's of Wrought Iron*. Write for your copy today.

A. M. Byers Company, Pittsburgh, Pa. Established 1864. Division Offices in Boston, New York, Philadelphia, Washington, Atlanta, Chicago, St. Louis, Houston, San Francisco. International Division: New York, N.Y.

Available in Canada and throughout the world.

BYERS *Wrought Iron Tubular and Hot Rolled Products*

ALSO ELECTRIC FURNACE QUALITY STEEL PRODUCTS

Case 32 — Tennessee

Filters Cut Spoilage

ONE OF the South's largest producers of cellulose, the Southern Chemical Cotton Co., Chattanooga, Tenn., obtains its water from the City of Chattanooga. This is river water coagulated with alum and passed through gravity sand filters. The chemical and physical properties of this water vary over a wide range due to great fluctuations of demand and change in river conditions. At times conditions are very detrimental to Southern Chemical's cellulose production.

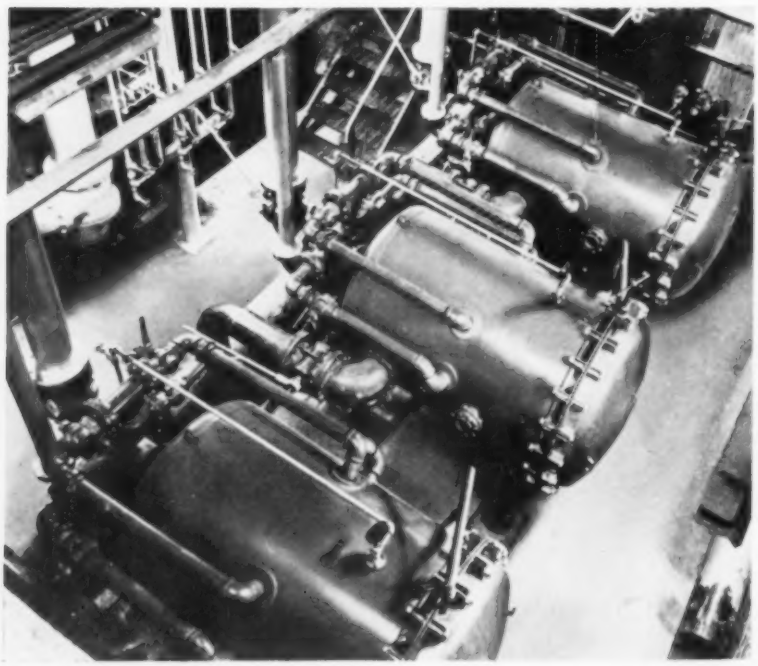
During the conversion of raw cotton linters into chemical cotton, a large amount of water is used. The fine cotton fibres filter out and retain any trace particles contained in the water. Thus, objectionable minerals would discolor and contaminate the material. This resulted in the production of off color cellulose, above specifications of certain elements.

Three water filters, having a total filtering area of 1,200 sq ft, were installed to alleviate this condition. These Sparkler Manufacturing Co. filters handle more than 5,000,000 gallons of water per day and efficiently remove the particles which formerly caused Southern Chemical's production difficulties. Plant officials credit their Sparkler water filter installation with eliminating a troublesome production problem and helping consistently to produce a product of satisfactory quality.

Case 33 — North Carolina

Double Duty Fork Truck

FORK TRUCKS at Arnold, Hoffman & Co. plant, Charlotte, N. C., serves both in maintenance and production. Photo shows one of the trucks transporting and moving into place a 2600 lb steam kettle. Normally, however, this Elwell-Parker truck carries drums or buckets of chemicals in palletized loads, transports them within the plant, stacks triple high for storage, and finally loads them into highway trucks.

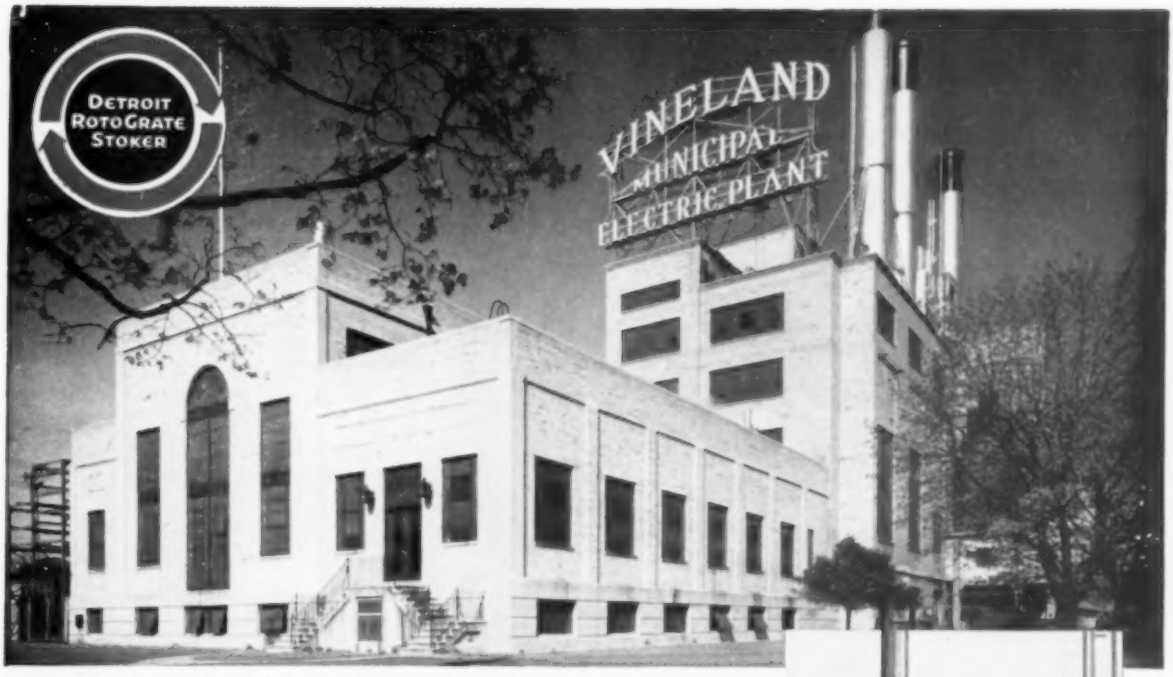


Case 34 — Texas

Chemical Resistant Vent Gasket Material

A LARGE variety of chemicals are stored in atmospheric storage tanks at the Texas City plant of the Carbide and Carbon Chemicals Company. These tanks are equipped with combination pressure-vacuum vent valves up to 24" diameter. For practical reasons, the same chemical is not always stored in the same tank. Since some of these chemical products cause various vent gasket materials to deteriorate, a large number of vent gaskets had to be changed.

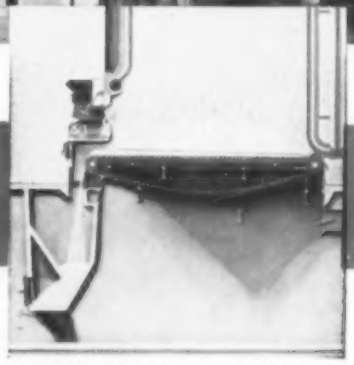
Teflon was known to be chemically resistant to the stored prod-



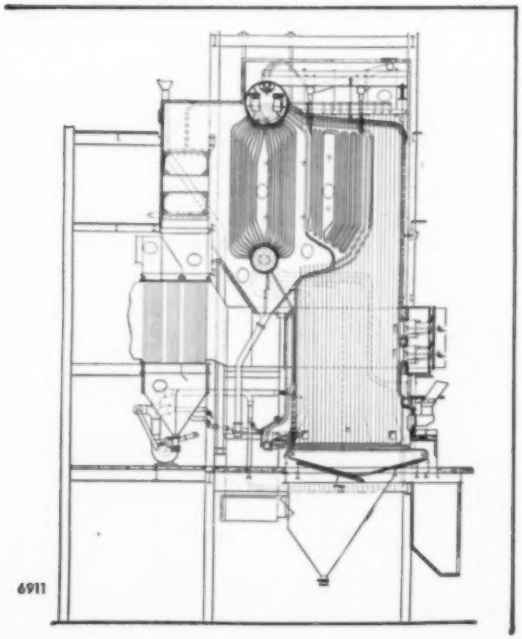
Vineland Municipal Electric Plant; Howard M. Down, General Manager of Municipal Utilities.

Fuel Savings by First Installation

BRING SECOND CONTRACT AT VINELAND MUNICIPAL ELECTRIC PLANT VINELAND, N. J.



Detroit RotoGrate Stoker—the original spreader stoker with forward moving grates that continuously discharge the ash at the front.



In 1950 this plant installed its first Detroit RotoGrate Stoker with a B&W Two-Drum Stirling Boiler with Superheater, Economizer and Air Heater; designed for a capacity of 100,000 pounds of steam per hour . . . 625 psi . . . 835°F . . . feedwater 354°F. Burners for auxiliary oil burning are provided.

Substantial economies produced by this unit resulted in a second order for a Detroit RotoGrate Stoker. This second unit is for a similar B&W Boiler of 130,000 pounds of steam per hour capacity . . . 875 psi . . . 910°F . . . feedwater 390°F. Design is based on eastern bituminous coal—12,700 BTU, with air preheated to 300°F.

This repeat order was based on the solid performance for which Detroit Stokers are noted.

They can save *you* money. Write for recommendations. No obligation.

DETROIT STOKER COMPANY

General Motors Building—Detroit 2, Michigan

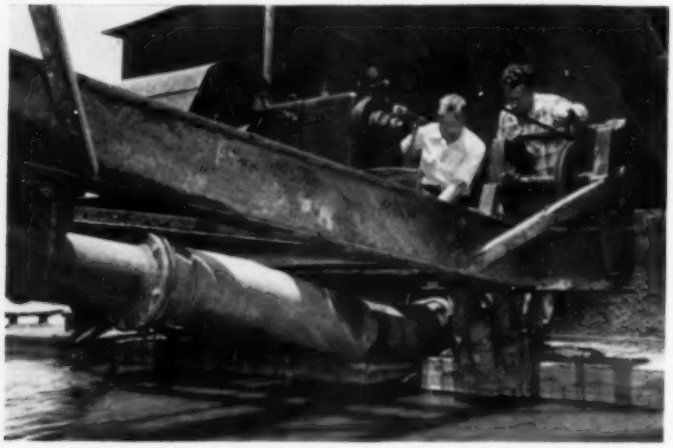
District Offices in Principal Cities • Works at Monroe, Michigan

ucts, but it was only available in a thickness which made it too stiff to effect a good seal and its high cost ws prohibitive.

For several months we have been using a gasket material made of glass cloth coated with Teflon. This material costs about 1/10 as much as pure Teflon, comes in 1/64" thickness and in rolls 38" wide.

We think that we have an ideal material, reasonable first cost, chemically resistant to a large group of products and flexible enough to seal properly.

By P. S. HOWERTON, Maintenance Engineer, Carbide and Carbon Chemicals Company, Texas City, Texas.



Case 35 — Florida Dredging Company

Pipe Resists Cutting Action

LARGE quantities of sharp oyster shells and abrasive sand have run through this 10-in. suction hose installed on the dredge "Duval" in the St. John's River near Jacksonville, Fla. A special rubber compound developed by The B. F. Goodrich Company Industrial Products Division, Akron, Ohio, withstands the cutting edges of shells and the grinding action of sand. The dredge is operated by the Duval Engineering and Contracting Co. of Jacksonville. About half the shell is used for chicken feed after it is washed, dried and ground into tiny particles. The remainder, unground, is used for road-building.

Case 36 — Georgia Mill

Smooth Starts Save Material

A LARGE Georgia textile mill operates a Hermas shearing machine, which takes the nap off cloth by the use of a rapidly rotating head having knife edges around its perimeter.

The sharp edges of the cutter have to run quite close to the cloth and a small amount of slack in the cloth permitted the material to come into actual contact with the knife edges, with the result that a considerable amount of material was sometimes destroyed.

At a section of the shearing machine, where cloth winding is accomplished, a hand adjusted friction device was installed to regulate the amount of torque applied so that as the roll increased in size and weight, a smooth start would be obtained by just the right amount of slip. Soft, smooth starting is required. When one length of material is almost finished, another roll is attached to the first and a hard, fast start will pull the joint apart.

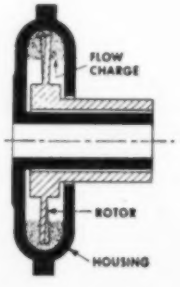
Driving power for entire machine, except the cutter head, was supplied by one motor. Hand adjustment of the friction proved unsatisfactory, in that an amount of torque, applied when the roll was small and light was insufficient to accelerate the roll quickly enough, when it became larger and heavier, thus allowing slack to develop. On the other hand too much torque applied pulled the joints apart.

Centrifugal Clutch

Study of the problem, and examination of the machine in operation, indicated that the use of a device such as a centrifugal clutch upon the main drive motor of the machine would start the entire machine slowly enough to permit the friction device to accelerate the windup roll at a rate sufficiently fast to prevent slack accumulating, and yet without applying enough torque to pull the joints out.

The Dodge Flexidyne seemed to be the ideal clutch for this service because of the simplicity of adjusting its torque capacity and, therefore, its accelerating characteristics. Accordingly, a Size 9 Flexidyne was purchased through R. L. Fulghum Co. of Atlanta and installed. After a small amount of experimenting, the desired effect has been obtained.

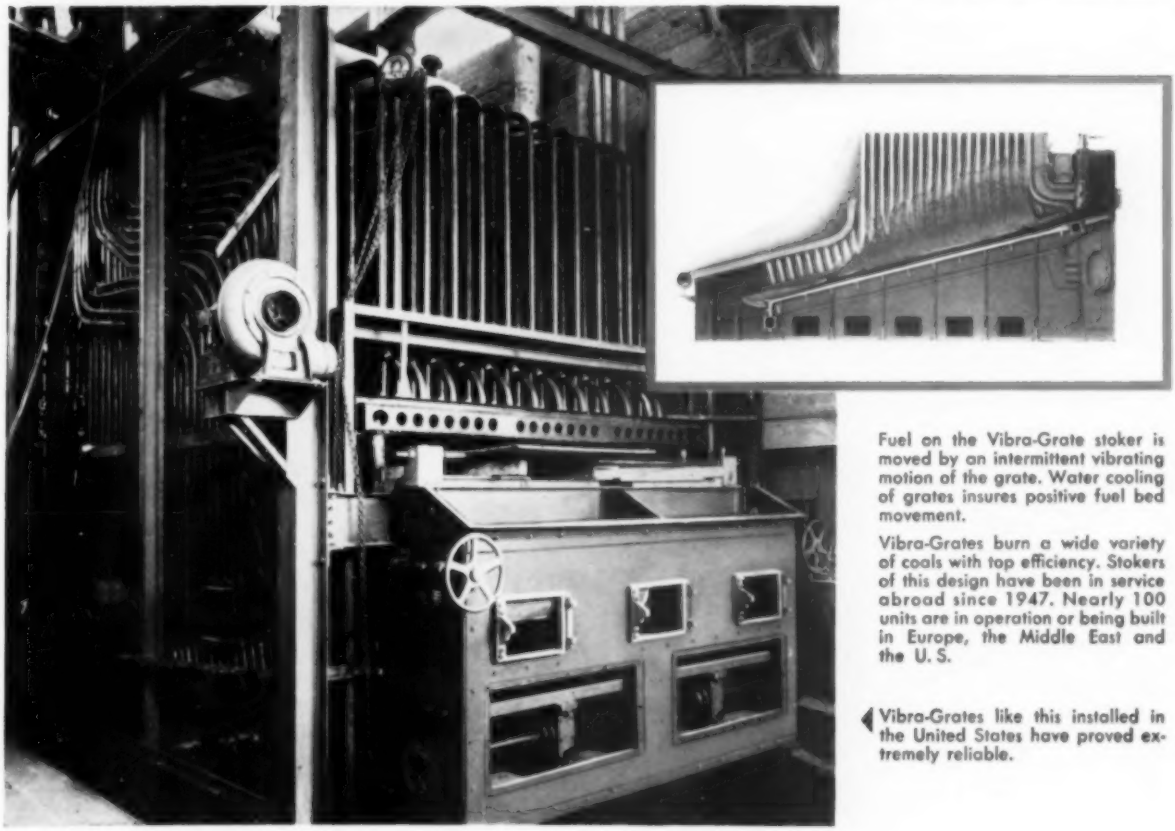
Reports indicate that no material has been ruined and no joints



HOW FLEXIDYNE OPERATES — The "fluid" in the Dodge Flexidyne is heat treated steel shot. A measured amount, called the flow charge, is contained in the housing, which is keyed to the motor shaft. When the motor is started, centrifugal force throws the flow charge to the perimeter of the housing, packing it between the housing and the rotor which transmits power to the load.

After a brief starting period of slippage between housing and rotor the two become locked together and achieve full load speed, operating without slip and at 100% efficiency.

NOW! TWO MORE VIBRA-GRATES ORDERED



Fuel on the Vibra-Grate stoker is moved by an intermittent vibrating motion of the grate. Water cooling of grates insures positive fuel bed movement.

Vibra-Grates burn a wide variety of coals with top efficiency. Stokers of this design have been in service abroad since 1947. Nearly 100 units are in operation or being built in Europe, the Middle East and the U. S.

◀ Vibra-Grates like this installed in the United States have proved extremely reliable.

WHEN A SOUTHERN STATE required a new stoker installation at one of its institutions, it set up certain basic requirements... great reliability ...abolition of smoke... freedom from objectionable discharge of solids from stack, all while burning local coals. Freedom from fly ash discharge was so essential, in fact, that any form of suspension or semi-suspension burning of coal was eliminated from consideration. AE water-cooled Vibra-Grate stokers were the obvious answer and two of them will be installed... *without dust collectors.*

Each Vibra-Grate stoker will have a steam generating capacity of 30,000# per hour continuously, with 35,000# peaks. The coal to be burned has the following proximate analysis: H_2O, 3%; V.M., 18%; F.C. 67%; ash, 12%; S., 1.5%; BTU per # A.F., 13,400. Other Vibra-Grates in the United States have been burning high volatile coals.

AE Vibra-Grate stokers are available in standard capacity ranges from 25,000 to 150,000# of steam per hour. Write for full information about Vibra-Grate, today's most efficient stoker.

AMERICAN ENGINEERING COMPANY

DEPT. S-103, WHEATSHEAF LANE & SEPVIVA STREET, PHILADELPHIA 37, PA.

Canadian Subsidiaries: Affiliated Engineering Corporations, Ltd., Montreal, P. Q.... Bawden Industries Ltd., Toronto, Ont.

AE products are: Taylor, Perfect Spread and Vibra-Grate Stokers, Hele-Shaw and Hydramite Fluid Power, Lo-Hed Hoists, Lo-Hed Car Pullers, Marine Deck Auxiliaries.

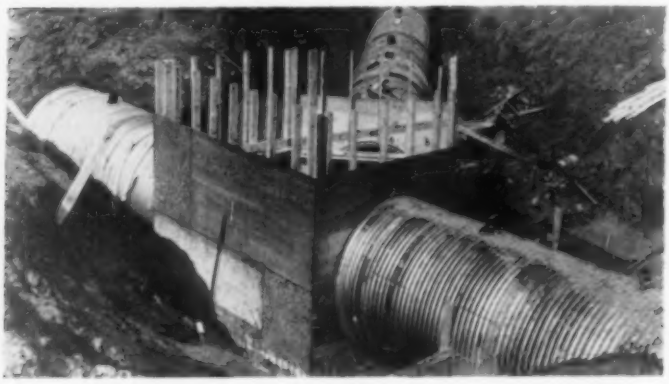
pulled out during the approximate six months this application has been in service.

Use of the Flexidyne can provide a wide range of acceleration characteristics from the softest of starts with attendant slow acceleration to a smooth start utilizing at the same time maximum motor torque for fast acceleration or starting unusually heavy inertia loads. On certain installations it can serve as a torque limiting device, or shear pin.

Case 37 — Tennessee Chemical Plant

Corrosive Waste Problem Solved

THE AMERICAN Enka Corporation had this problem while building a new rayon staple plant near Morristown, Tennessee. An effluent line was needed to carry waste water from the plant. The water is highly corrosive with the pH content ranging from 4.0 to 9.0. At times there may be an even greater concentration, particularly of acid.



Various solutions were considered before the engineers approved the installation of corrugated pipe known as Smooth-Flo sewer pipe, manufactured by Armco Drainage & Metal Products, Inc., inside corrugations of this pipe are covered with a special grade of asphalt, centrifugally applied. The interior is uniformly smooth, and combines high flow capacity with the strength of corrugated metal. There is no possibility of corrosive attack.

The job called for 2,237 lineal feet of pipe in diameters ranging from 48- to 66-in. An interesting feature is the illustrated three-way junction box. Pipe in top center connects with an existing Asbestos-Bonded pipe line installed in 1947. Pipe at left is stub for future plant expansion.

Case 38 — North Carolina

Crane Lubricant

BOTH the trolley wires and the wire rope cable on all five cranes in the North Carolina warehouse of a steel company required frequent servicing and replacement. Frequent burn-thru on the copper trolley wire caused a dangerous hanging of the live wire.

Using Molub-Alloy industrial grease (Imperial Oil & Grease Co.) on the current collector, this steel warehouse reports no failure to date. The life of the wire rope cables in the cranes has been extended because the same Molub-Alloy industrial lubricant (metallic) permits smooth flexure of the wire strands in the cable, reduces internal friction and fracture, permits easy fitting of the wire rope into the grooves of the sheave, and prevents the wear of deeper grooves into the sheave.

Case 39 — Texas Manufacturer

Silicone Smooths the Way

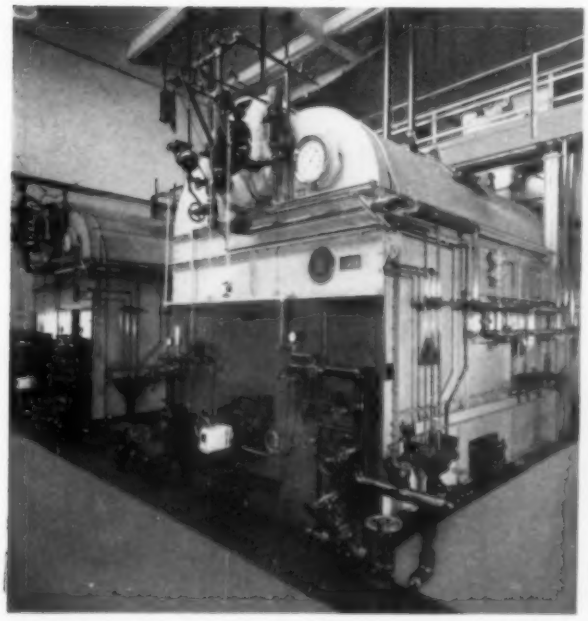
PRODUCTION men at Vector Manufacturing Co. of Houston, had difficulty in drawing the completed conductor into a heavy neoprene protective hose. The conductor tended to cling to the tacky interior of the hose, occasionally tearing it. Many lubricants, including talc and castor oil, were tested but it wasn't until they tried Dow Corning 200 Fluid that they found a really effective "slip" agent.

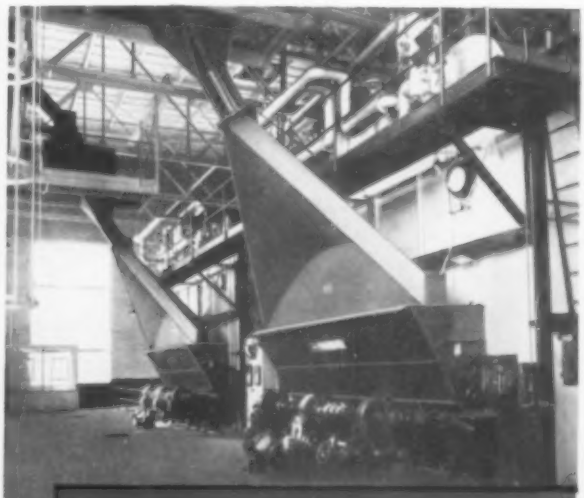
Here's how Vector does it. First, the neoprene hose is laid out full length and a bobbin trailing a lightweight cord is shot through it. One end of a wire rope is attached to the cord and the other end is connected to the reeled conductor. Dow Corning 200 Fluid is then poured into the hose entrance at the rate of a cupful for every 100 ft of hose. The wire rope and a conductor are easily pulled through the hose with a small 1 hp winch.

In addition to solving this assembly problem, the Dow Corning 200 Fluid facilitates movement of the conductor within the hose and prevents kinking in actual marine survey service. The silicone fluid also helps to keep sea water from penetrating the conductor if the hose is torn or abraded by dragging over rough sea beds.

KEELER "CP" ALL-PURPOSE BOILER

continues to deliver more steam capacity in a given space . . . larger combustion chamber with less head room than other types





Left above—Two oil fired Keeler "CP" boilers, each with 16,500-lb. steam capacity. Right above—Two Keeler "CP" boilers, each with 60,000-lb. steam capacity, operating with multiple retort bituminous coal stokers.

In thousands of operations throughout the nation and abroad, the Keeler "CP" continues to be the "pacesetter" in providing a reliable, efficient source of low cost steam for power, process and heat requirements—with user reports like these . . .

"fuel savings of approximately $700 per month" . . ."reduction of 25% over cost of operating previous boilers". . ."operating almost continuously at 200% to 250% of rating and maintenance has been practically nothing"!

The Keeler "CP" is a fully steel encased and insulated water tube steam generator with water cooled walls. Among its many features, the "CP" water circulation occurs in a free and unrestricted flow, without the use of internal baffle plates. This permits operation at high overloads with exceptionally dry steam and no disturbance of the water level. The "CP" is readily convertible to all methods of firing, for all types of fuels—coal, oil, natural gas or waste gas.

Keeler boiler efficiency and dependability is available in a size unit required for your service . . . write or phone for complete information.

KEELER **Type CP**

READILY CONVERTIBLE

Original of its type, the "CP" delivers high efficiency with induced or natural draft operation—designed for all types of fuel and readily convertible at minimum cost. Made in a wide range of sizes in pressures to 500 psi and capacities to 150,000-lbs. of steam per hour. Shipped shop assembled up to and including 350 rated horsepower.

The Seal of Quality in Water Tube Boilers

Write For Bulletins

No. F-14: Type CP Package Boilers
No. M-2A: Type CPM Package Boilers
No. DK-1: Type DK Package Boilers
No. MK-1: Type MK Boilers

KEELER WATER TUBE Boilers

— ESTABLISHED 1864 —

E. KEELER CO.

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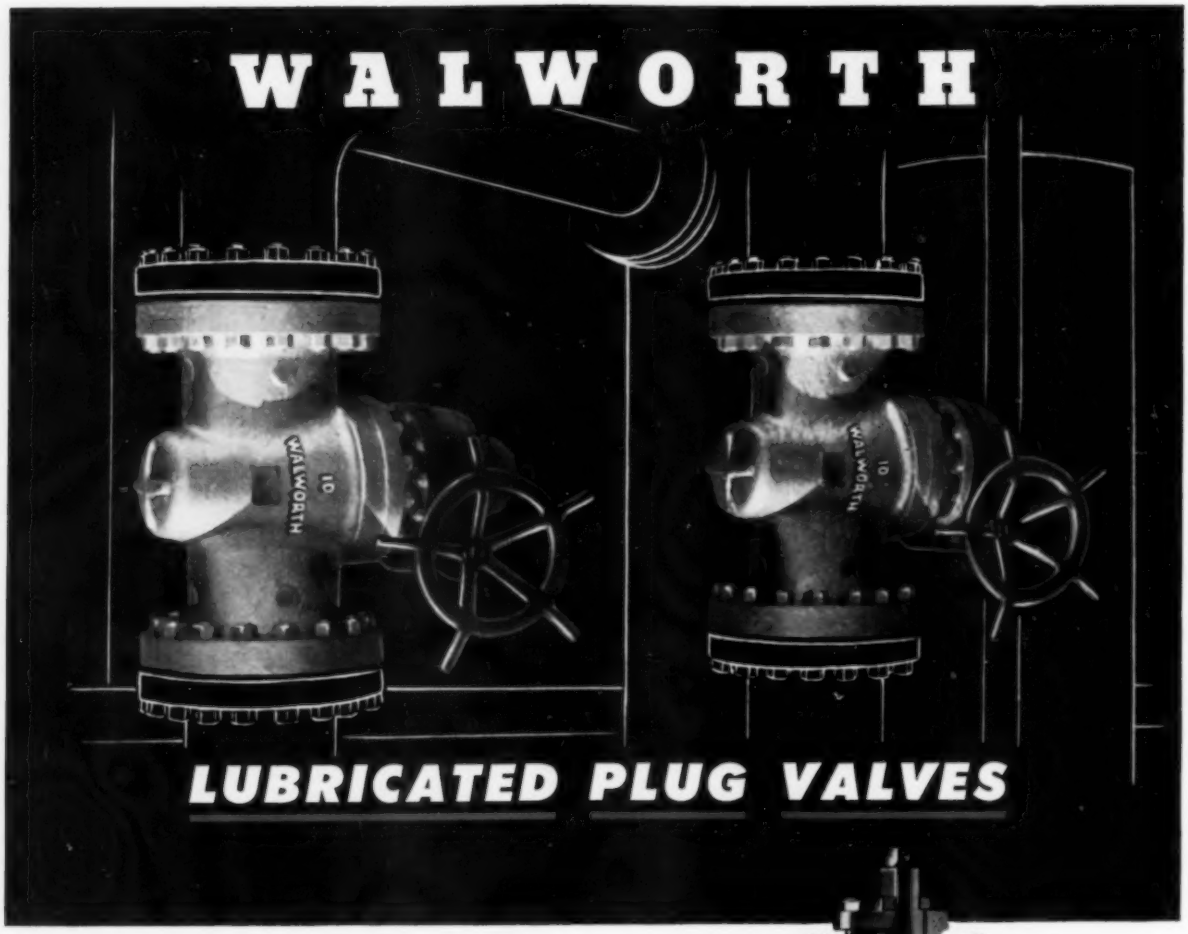
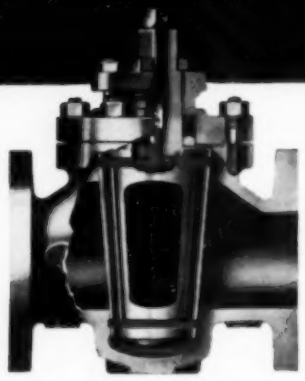
— OFFICES IN PRINCIPAL CITIES —

WALWORTH



LUBRICATED PLUG VALVES

Better because... **They are *pressure sealed* with an insoluble lubricant readily renewed while the valve is in service. Lubricant completely surrounds the plug ports assuring a tight seal against leaks. It also insures ease of operation by reducing friction between the body and the plug while at the same time protecting the finished surfaces against corrosion and wear.**



Lubricant system of a Walworth No. 1700F Regular Gland, Wrench Operated, Steel-iron, *Lubricated Plug* Valve. Other Walworth *Lubricated Plug* Valves include Single Gland, and Ball Bearing types. Sizes to 30-inches — pressures to 5,000 psi, and for vacuum service.

Walworth Lubricated Plug Valves are the most satisfactory valves available for the handling of gritty suspensions, and many other destructive, erosive, and corrosive industrial and chemical solutions.

They are ideal for general refinery and pipeline service.

FOR COMPLETE INFORMATION, *SEE YOUR WALWORTH DISTRIBUTOR OR WRITE FOR ILLUSTRATED CIRCULAR*

WALWORTH

60 East 42nd Street, New York 17, New York

SUBSIDIARIES: ALOYCO ALLOY STEEL PRODUCTS CO. CONOFLOW CORPORATION M&H VALVE & FITTINGS CO. SW SOUTHWEST FABRICATING & WELDING CO., INC. WALWORTH COMPANY OF CANADA, LTD.

Central Soya's new soybean solvent extraction plant. The four-level extraction building (left) is built on open construction design entirely. The three-level enclosed milling building to the right incorporates an unusually effective installation of daylighting strips of Resolite plastic panel.

Case 40 — Tennessee Food Processing

Plastic Panel Provides Light

PLASTIC panel is doing the work of millions of candlepower of artificial light in a modern Chattanooga, Tenn. oil extraction plant. The translucent panel floods the interior working area with soft, diffused, glareless light, providing maximum eye comfort for the workers.

The two-building soybean solvent extraction plant — part of the complex of structures that makes up the Central Soya Company, Inc., and McMillen Food Mills plant, Chattanooga — is a highly automatic, continuous process plant. It requires only three workers and a foreman per shift — for both buildings.

The extraction plant consists of a three-story milling and conditioning building and an open-structure, four-level extraction building.

The milling building is constructed of steel and concrete slab. Central Soya has achieved highly effective daylighting of the interior by using 4 ft wide continuous horizontal strips of ice blue translucent plastic panel.

According to plant engineer Max Spencer, "The Resolite panel provides extremely effective, shadowless lighting throughout all three floors of the building. It creates ideal working conditions. We use no artificial lighting at all during the daytime."

Another advantage, he emphasized, is the fact that there is no worry about broken window panes. The tough, fiberglass-reinforced panel is shatterproof. Two types are used in the extraction plant — standard Resolite and "Fire-Snuf" fire retardant panel, both manufactured by the Resolite Corporation of Zelienople, Pa.

The horizontal strips of plastic panel are alternated with corrugated aluminum siding on the milling building. Horizontal 6-in. wide aluminum strips painted "stratosphere blue" add color interest. The total effect is pleasing, since the corrugated plastic integrates with the corrugated aluminum sheathing in a pleasing pattern.

Case 41 — Lower Power Requirements

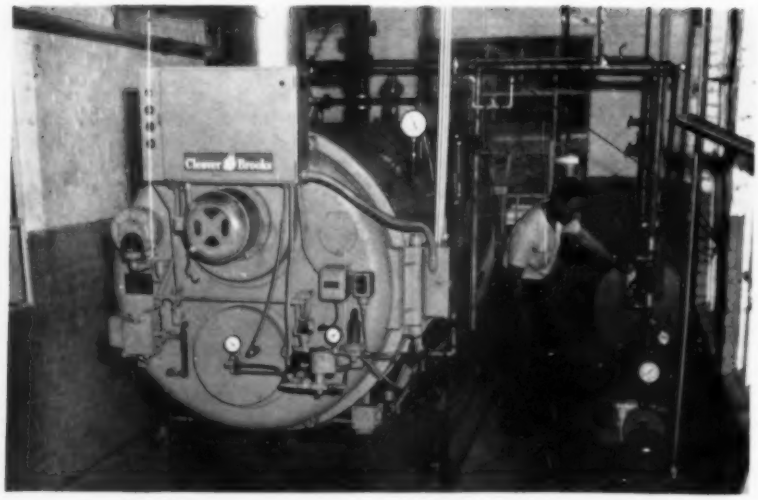
Cooling Tower Kinks

IF YOUR cooling tower is mounted on the roof of your plant or immediately adjacent to the plant, consider arranging for any exhaust air from the plant to be directed towards the tower intake. The lower wet bulb temperature indoors as compared to outdoors will increase the tower rating.

Also consider cycling the tower fans in response to basin water temperature to maintain a more constant high side pressure on your refrigerating plant and therefore more uniform expansion valve operation. If the tower has two or more fans, they can be cycled in steps.

In any event, "fan-off" operation when possible produces horsepower savings. The basin thermostat differential should be sufficient to prevent short cycling of the tower fan motor.

By JOHN A. WEBER, Consulting Engineer, Austin, Texas



Case 42 — South Carolina

Using Cheaper Oil

UNION Dyeing and Finishing Co., Union, S. C., formerly used a boiler requiring No. 2 oil. This mill recently installed an 80 hp Cleaver Brooks package boiler which uses No. 5 oil. The savings in oil alone will pay for the new installation in two years, according to an official of the mill.

The new boiler has a fuel preheater and gas pilot light. Also, provisions are made to convert the equipment to natural gas quickly.

Case 43 — Tennessee Manufacturer

Air Cylinders Increase Production

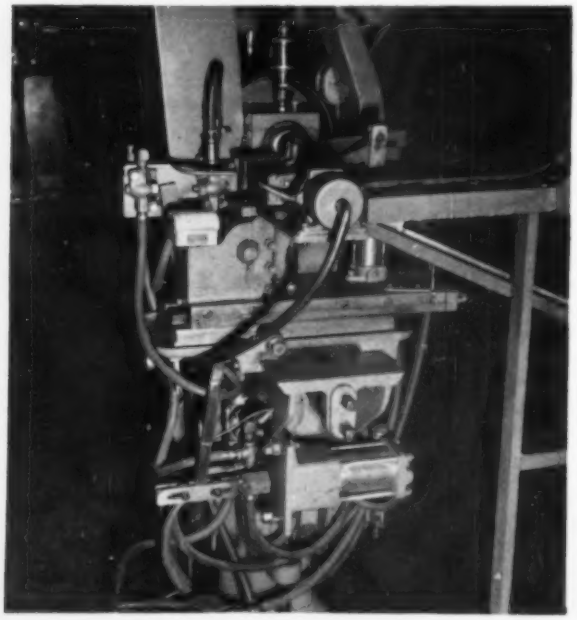
IN A PROGRAM of cost reduction through increased productivity, one aim was to increase the output on the highly repetitive, relatively simple milling operations being performed on standard hand milling machines.

The first approach was the design and development of special machines for each operation or group of similar operations which proved to be extremely expensive. Before going to this expense it was decided to study the problem further to see if the present machinery could not be utilized with the adaptation of additional mechanical devices.

After considerable investigation into the various types of equipment available, air cylinders seemed to best fit the need. Considering the results that could be obtained, the cost of the equipment and the estimated installation expense appeared to be very reasonable.

Once this program got underway it did not take long to discover many applications for this equipment on other machine tools and even assembly operations.

Making this machine automatic with air cylinders doubled production.



Typical Application

The following is an example of a typical application on a hand milling machine that is currently being used in the plant.

The part being machined is a steel padlock shackle. The shackle of the padlock is the steel rod stock that extends out of the padlock case.

The operation to be performed was to mill a slot on the inside of the leg of the shackle that remains inside the lock case. This slot acts as a guide for the shackle as it moves in and out of the case when being locked and unlocked.

The old method of performing this operation was as follows:

Place part in vise fixture with left hand.
Close cam action vise with right hand.
Raise table with left hand.
Move table horizontally to make cut with right hand.
Return table horizontally with right hand.
Lower table with left hand.
Open vise with right hand.
Remove part from vise with left hand.
Get new part with left hand.

The production rate was 548 pieces per hour.

Three air cylinders were installed on the machine. One on the vise, one on the vertical table

Dairyland Power Cooperative, Wisc.
The Franklin Heating Station,
Rochester, Minn.
Kansas City Power and Light Co.
Missouri Public Service Co.
Montana-Dakota Utilities Co.
Pacific Gas & Electric Co.

Central Illinois Public Service Co.
Commonwealth Edison Company
Detroit Edison Co.
Jersey Central Power & Light Co.
Lake Road Station, Cleveland, Ohio
Pennsylvania Electric Co.
Public Service Electric and Gas Co. (N. J.)

NATIONWIDE!

East Side Station, Garland, Texas
Mohawk Station, Tulsa, Okla.
Salt River Power District, Ariz.
Texas Power & Light Co.
Tucson Gas, Electric Light & Power Co.
West Texas Utilities Co.

Carolina Power & Light Co.
Columbus & Southern Ohio Electric Co.
Georgia Power Company
Mississippi Power Company
Monongahela Power Company
South Carolina Public Service Authority

*Central Stations and Utilities use... Graver Deaerating Heaters**

A partial listing of tray and spray-tray type installations with capacities up to 2,250,000 lbs. per hour.

*WRITE FOR MANUAL OF POWER PLANT INFORMATION

A COMPLETE LINE
OF WATER TREATMENT
EQUIPMENT

GRAVER

Industrial Dept.: I-212

GRAVER WATER CONDITIONING CO.
Division of Graver Tank & Mfg. Co., Inc.
216 West 14th Street, New York 11, N. Y.

feed and one on the horizontal table feed. Also, an air line was run to the vise so the part would be blown out of the vise when the jaws were opened.

The new method of performing the operation is as follows:

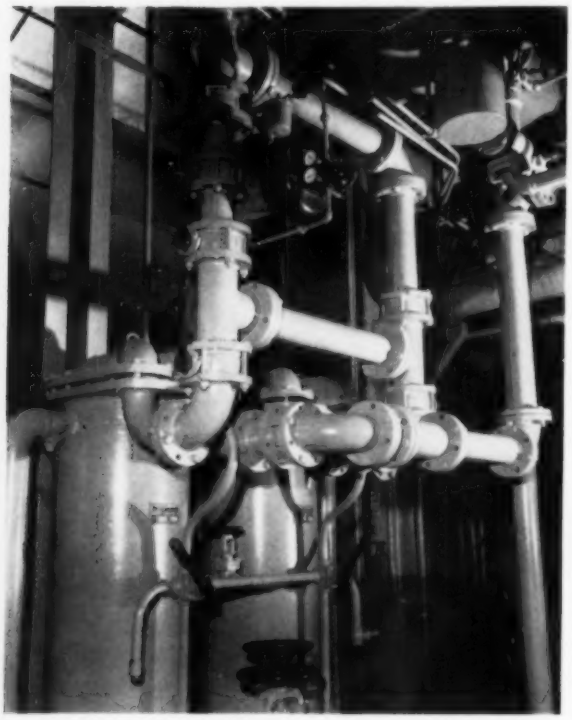
Place part in vise fixture with left hand.

Press down foot pedal.

When the foot pedal is depressed, the vise closes, the table feeds vertically to depth, then moves horizontally to cut, returns to normal position, the vise opens and the part blows out of the vise down a chute into the shop box. During the time the machine is running the operator brings up the next part with the left hand ready to place it into the vise fixture.

The new production rate is 1,054 pieces per hour. The total expenditure was approximately five hundred dollars.

By JOHN L. SCHMIDT, Chief Standards Engineer, Yale & Towne Mfg. Company, Lenoir City, Tenn.



Case 44 — Texas Chemical Plant

Saran Lined Pipe Resists Corrosion

A TEXAS Chemical Plant is using Saran lined steel pipe extensively throughout its operations to handle sea water for cooling purposes. Unlined steel pipe has a life expectancy of two to three years, while Saran lined pipe has been in service for over ten years with no sign of failure. Typical installations include the sea water cooling lines to an oil cooler and the sea water inlet and outlet lines to a condenser unit. It is used also to handle salt brine, acids, and other corrosive chemicals.

Saran lined pipe, fittings, and valves are available in sizes ranging from 1" thru 6", and are manufactured and stocked by The Dow Chemical Company at its Bay City, Michigan, plant.

Sea water cooling lines to the oil cooler

Case 45 — Texas Utility

Cart for Metallizer

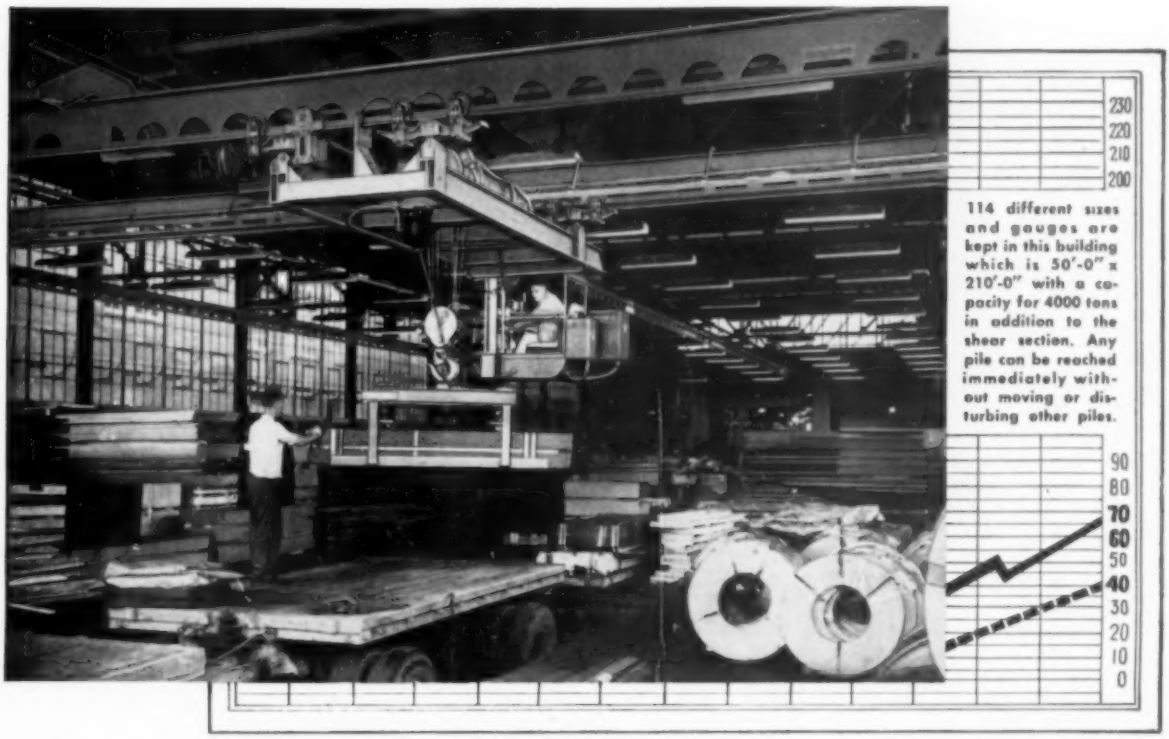
OUR COMPANY recently purchased Metco Metallizing equipment. In order to make the equipment portable, we built a cart to carry the equipment. The air filter and regulator, and the oxygen and acetylene flow meters are mounted on a frame at the back end of the cart. The oxygen and the acetylene bottle with their regulators are mounted behind the frame. The wire control reel is mounted on top of a storage cabinet at the front end of the cart.

When the equipment is used the cart is backed up to the work place and an air line is attached to the coupling provided. All instruments and controls are convenient to the operator.

By M. G. LEECH, Machinist, Southwestern Public Service Co., Amherst, Texas.

Crane Cuts Steel Handling Costs 66⅔%

Boosts Shear Production 40%



Up to 15 truck loads, or 150 tons of incoming steel are handled in a day by a 5 ton, 48'-0" span, 3-runway Cleveland Tramrail crane in the warehouse of the Art Metal Construction Co., Jamestown, N. Y., well-known manufacturers of office furniture. This formerly was lifted off the trucks with a chain hoist onto floor trucks which handled it thereon.

The new Tramrail Crane takes the steel directly from trucks to storage without re-handling, and, also, from storage to shears. One man in the crane cab and another on the floor take care of the entire steel handling job. The man-hours required for this have been cut to one-third.

An extra advantage, not originally anticipated, has been the increased output of the six shears. Formerly, it was necessary for the shear operators to haul the steel they cut, from storage to their machines. Now this is done by the crane. As a result, the shears are in operation more of the time and shear production has been increased 40%.

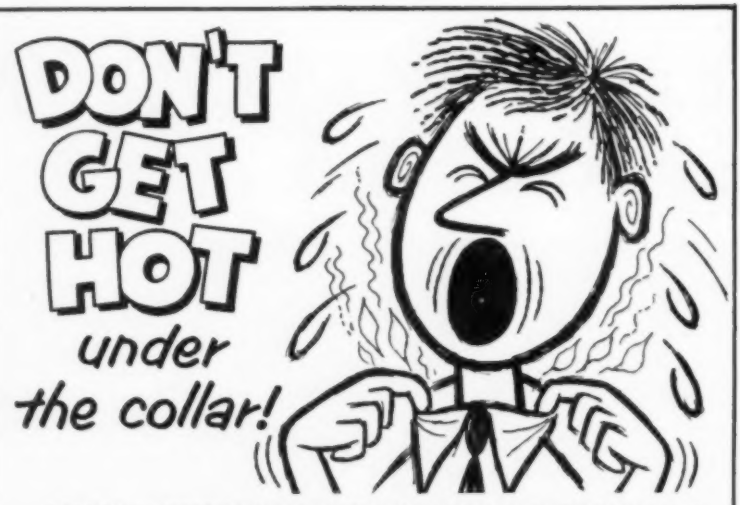
Properly engineered overhead Tramrail equipment can be such an important factor in lowering costs and securing other advantages that we urge you to have a nearby Cleveland Tramrail representative check your handling methods.

GET THIS BOOK!

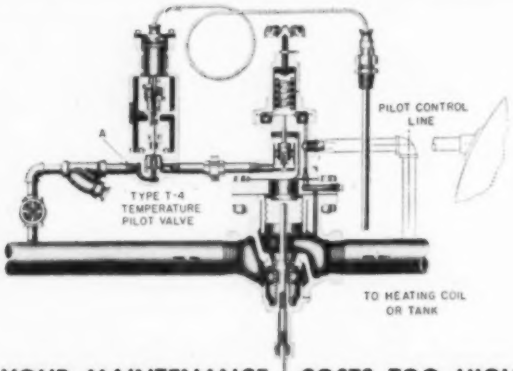
BOOKLET No. 2008. Packed with valuable information. Profusely illustrated. Write for free copy

CLEVELAND TRAMRAIL DIVISION
THE CLEVELAND CRANE & ENGINEERING CO.
7474 EAST 284TH STREET, WICKLIFFE, OHIO

CLEVELAND TRAMRAIL
OVERHEAD MATERIALS HANDLING EQUIPMENT



... THERE'S A FOSTER TEMPERATURE REGULATOR TO CONTROL THE HEAT



ARE YOUR MAINTENANCE COSTS TOO HIGH DUE TO INACCURATE TEMPERATURE REGULATION?

MAYBE they are and you don't realize it. At any rate it will pay you to investigate the Foster line of temperature regulators for controlling temperatures of liquids and gases.

Foster manufactures a complete line of regulators for use in power or process plants, laundries and business buildings — for hot water storage heaters, fuel oil heaters, pasteurizers, ovens, driers, cookers and other heating and cooling equipment.

They are available in single or double-seated construction; direct or reverse acting for cooling. The Foster combination Pressure and Temperature Regulator reduces piping costs and assures control of temperature at any pre-determined pressure.

The Foster Type T-10 Temperature and Pressure Reducing Regulator shown here, permits not only the adjustment of the temperature being regulated, but also the adjustment and automatic regulation of the maximum steam pressure to be applied to the vessel.

All regulators are manufactured of materials to insure extra long life and minimum maintenance in any specific field.

If you have a temperature control problem, consult your Red Book for address of nearest Foster Representative, or get in touch with us direct. Ask for your copy of Bulletin T-101.

FOSTER AUTOMATIC VALVES

FOSTER ENGINEERING COMPANY

835 LEHIGH AVENUE, UNION, N. J.

- AUTOMATIC VALVES
- CONTROL VALVES
- SAFETY VALVES
- FLOW TUBES

Case 46 — Textile Mills

Current Collection

EVER present lint in Southern textile mills has always presented a fire hazard. One method developed for maintaining lint suspension, and thus avoiding fire hazard, includes a frame supporting a motor and fan. This blower unit is suspended on a trolley and the entire unit revolves on a monorail.

The Ohio Carbon Company was asked to help in the improvement of design in current collection. The rail system incompasses process equipment. As the blower travels the rail a metal roller acts as current collector to transmit energy from rail to motor. The roller was overheating and causing bearing failure and sparking at the point of contact, thus creating a fire hazard.

By applying brush engineering, The Ohio Carbon Company designed a current collector of grade "M1." After the steel rolls have picked up the current the collector located inside the roll collects it from said roll and conveys it to the motors.

The intimate contact of "Ohio Grade M1" has eliminated sparking and roller overheating.

Case 47 — Louisiana

Cleaner Harmless to Rubber Gloves

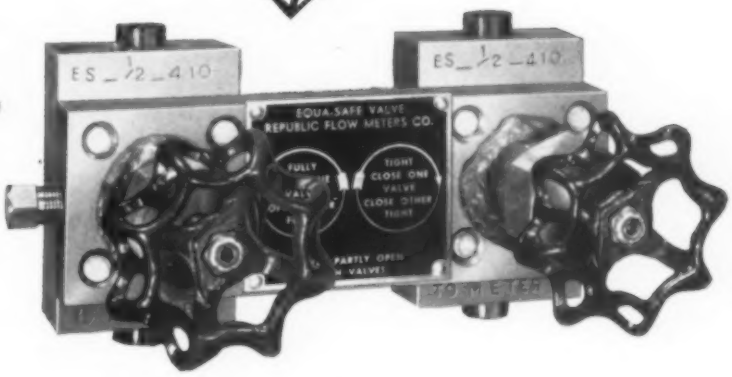
THIS DATA is gleaned from a recent bulletin issued by the Safety Director of the Gulf States Utilities Company, directed to the various foremen and executives of his firm.

"We have had numerous requests to find a suitable waterless hand cleanser that will not have an adverse or damaging effect on rubber gloves as used by employees in the line, service and other departments that use high voltage glove protective devices.

"Tests that we have run on many different kinds of hand cleansers have proved many cleaners unsatisfactory, but Vi-Lan Clean

NOW AVAILABLE

Valve Manifolds that STOP Mercury Blowing, Damage to Differential Bellows and Diaphragms



- **CANNOT throw full line pressure across bellows, mercury or diaphragms of ΔP instruments.**
- **Replaces 3 or 4 conventional shut-off valves, fittings, etc.**
- **Rated to 4000 psi (cold)**
- **Available with angle, 3-way or through-type bodies . . . threaded or socket-welded connections.**

No conventional built-up valve manifold affords the protection EQUA-SAFE *automatically* gives to differential pressure type instruments. And no built-up valve manifold can beat the low installation time or low maintenance required by EQUA-SAFE valves.

The "secret" of EQUA-SAFE's protection is in the common bridge-type bonnet and the two double-seating valves it connects. *When either valve is operated* (and sequence does not matter) *pressures in the two chambers of the differential instrument are automatically equalized through the bonnet.* As soon as both valves are fully "opened" (stem out) the instrument is on the line, with no leakage between sides. When both stems are in, the instrument chambers are interconnected and completely sealed off from primary connection pressures. Teflon packings are under pressure only while the stems are traveling from "seat" to "backseat", or vice versa!

Standard EQUA-SAFE valve manifolds are made of carbon and/or stainless steel, depending on your requirements. If your requirements are unusually severe, remember that EQUA-SAFE valves can be made of *any bar stock material that can be machined and welded!* When inspection or maintenance are needed, this bolted-block construction pays off again. EQUA-SAFE valves can be completely dismantled without breaking any pipe connections, and the inlet seat can be dressed up in place. A reversible backseat ring gives double wear, and is merely turned upside down to present a brand new seat.

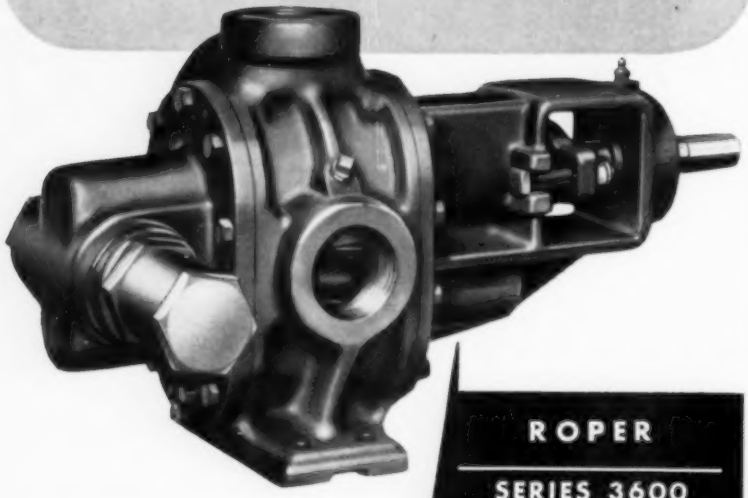
Get the entire story on what EQUA-SAFE valves can do for your differential instrument installations. Write for Republic Bulletin No. 56-1, or ask your Republic engineer. Now that there is a top-quality instrument valve manifold for ΔP instuments, you should definitely investigate its applications in your plant.

REPUBLIC FLOW METERS CO.
2240 Diversey Parkway, Chicago 47, Illinois

ROPER

STANDARD PUMPS
FOR PROCESS INDUSTRIES

All-iron and All-iron with Bronze Bearings



ROPER
SERIES 3600
General Purpose Pump
40-300 G.P.M.
TO 90 P.S.I.

Designed for a broad range of clean liquid applications, the Roper Series 3600 General Purpose Pump is widely recognized for its highly dependable performance, low maintenance characteristics, and ease of installation • Roper standard fitted models have cast iron housings, hardened iron gears, 4 high-lead bronze bearings and precision-ground steel shaft. All iron models, with hardened iron bearings, are also available for specific needs. All models are available with or without adjustable relief valve in mechanical seal or packed box construction • The Roper representative in your vicinity will be glad to go over your requirements with you, whether you are interested in pumps for replacement or for original equipment in new processing operations. Call him today!

ROPER Rotary Pumps

Send for Catalog today!

GEO. D. ROPER CORPORATION
440 Blackhawk Park Avenue, Rockford, Illinois

hand cleanser (Dameron Enterprises, Inc., Louisville, Ky.) has met all of our tests satisfactorily and can be recommended for use where hand-cleaning material comes in contact with rubber gloves.

"The field test on Vi-Lan Clean was run in the Baton Rouge line department. Mr. Exner, the general line foreman of this department, commented that his men were well pleased with this cleanser and that its antiseptic feature was particularly noticed. It is claimed that this product has a dermatitis inhibitory feature not found in other hand cleansers of this kind."

Case 48 — Texas Wood Treating

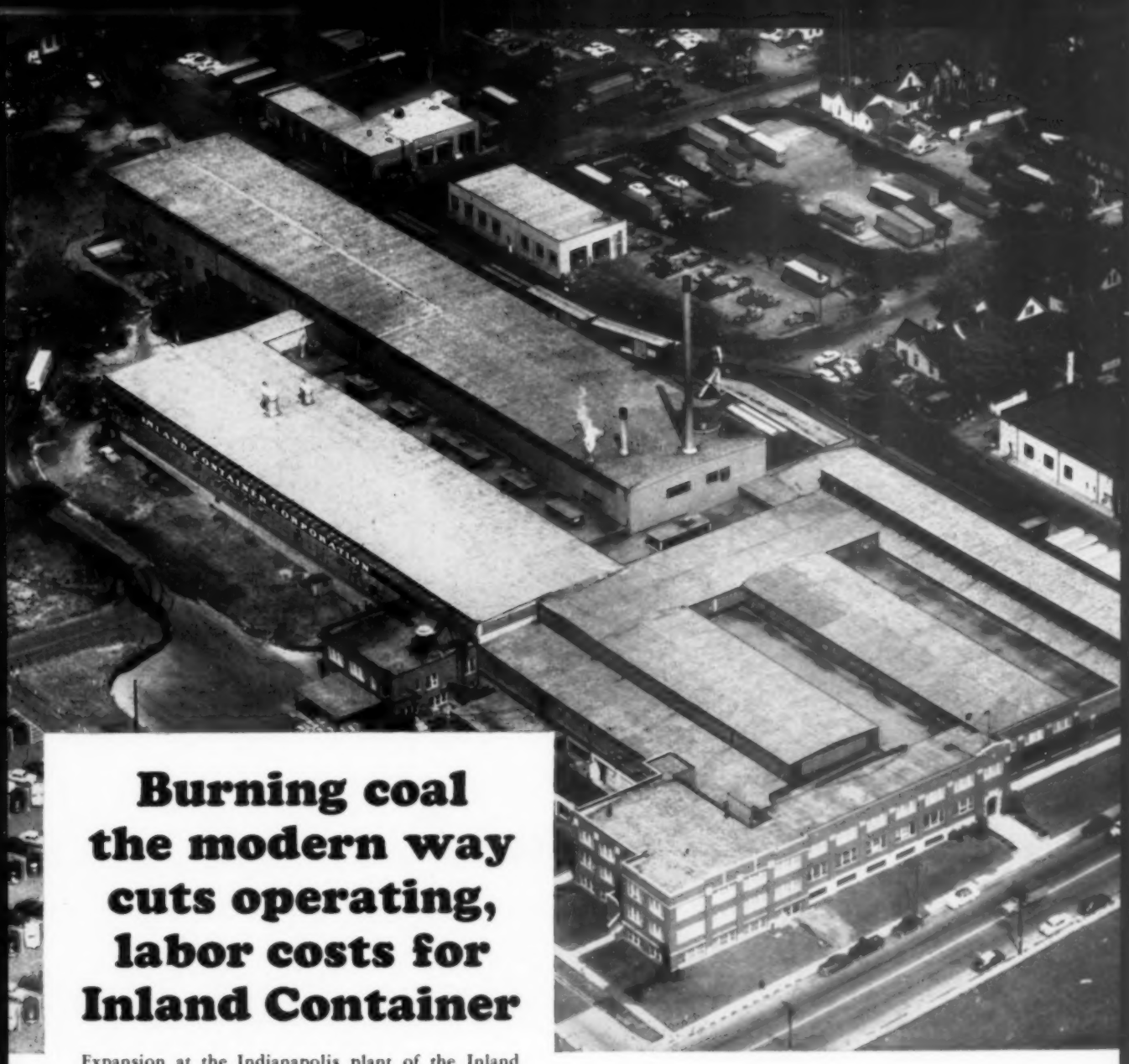
Better Steam for Less Money

A WOOD treating company at Houston, Texas, found that with increasing labor and fuel costs, new automatic packaged boilers would reduce their steam costs to an extent to pay for the boilers.

On that basis a 125 hp Ames steam generator was purchased to fire natural gas. Not only did this reduce steam costs, but it has increased production rates, since the pressure regulation (and the constant saturated steam temperature) gave the plant operators better control of their product.

As a result of this experience this company has now purchased a 200 generator from Ames Iron Works to replace a battery of small oil field boilers. Since their gas rate recently increased nearly 25% and since the packaged boiler will increase their boiler room efficiency by more than 30%, they expect to pay for these improvements in fuel costs alone within five years. They also anticipate an annual labor savings of $5,000.00 in boiler supervision.

More important, however, they predict that their production will materially increase and the quality of their production will be better without expanding their present production equipment.



Burning coal the modern way cuts operating, labor costs for Inland Container

Expansion at the Indianapolis plant of the Inland Container Corporation required additional steam capacity. The expansion was complicated by the limited space available. Inland's Engineering Department, with the assistance of W. J. Barrows & Associates, Engineering Consultants, solved the expansion problem.

Today the power plant has a new 30,000 lb.-per-hr. boiler and also a 300-ton silo. Liberal use has been made of automatic controls; coal and ash handling have been completely mechanized. Now steam loads are adequately maintained. Boiler room performance has been highly satisfactory and economical. Furthermore, this modernization has enabled Inland Container to effect considerable savings by more efficient operation of its power system.

For further information or additional case histories showing how other plants have saved money burning coal, write to the address below.

NATIONAL COAL ASSOCIATION
Southern Building • Washington 5, D. C.

Consult an engineering firm

Designing and building hundreds of heating and power installations a year, qualified engineering firms can bring you the latest knowledge of fuel costs and equipment. If you are planning the construction of new heating or power facilities—or the remodeling of an existing installation—one of these concerns will work closely with your own engineering department to effect substantial savings not only in efficiency but in fuel economy over the years.

facts you should know about coal

In most industrial areas, bituminous coal is the lowest-cost fuel available • Up-to-date coal burning equipment can give you 10% to 40% more steam per dollar • Automatic coal and ash handling systems can cut your labor cost to a minimum. Coal is the safest fuel to store and use • No smoke or dust problems when coal is burned with modern equipment • Between America's vast coal reserves and mechanized coal production methods, you can count on coal being plentiful and its price remaining stable.

Geared TO MEET INDUSTRIES' DEMAND FOR HIGH QUALITY CONVEYING MACHINERY

Typical Mathews truck-haul system designed to provide continuous flow warehousing.

Whatever the conveying problem might be—whether it involves the handling of a few pounds or many tons —**Mathews** builds the equipment to do the job. You can be sure of this service, from proposal through installation, when you buy **Mathews Conveyers.** And, of course, you get the benefit of over **fifty years' experience** in continuous flow material handling.

50 YEARS OF MC/C MECHANIZED HANDLING

MATHEWS CONVEYER COMPANY
GENERAL OFFICES . . . . ELLWOOD CITY, PENNSYLVANIA
PACIFIC COAST DIV., MATHEWS CONVEYER COMPANY WEST COAST, SAN CARLOS, CALIFORNIA
CANADIAN DIVISION . . MATHEWS CONVEYER COMPANY, LTD. PORT HOPE, ONTARIO

Engineering Offices or Sales Agencies in Principal American and Canadian Cities
Export Representative—Foreign Trade Division of New York Hanseatic Corporation

MATHEWS

News (Continued)

Cooper-Bessemer—Dallas

The promotion of **R. F. "Tad" Bartlett** to Branch Manager of the

Dallas Branch by A. A. Burrell, Vice President and Southwestern District Manager, has been announced by Robert F. Lay, Vice President and General Sales Manager of the Cooper-Bessemer Corporation.

Under the new field office organization plan, Mr. Bartlett will be responsible for supervision of the Dallas Branch area activities on direct sales, engineering, and service contacts in the application of reciprocating and centrifugal compressors for pipe line, refinery and petrochemical use.

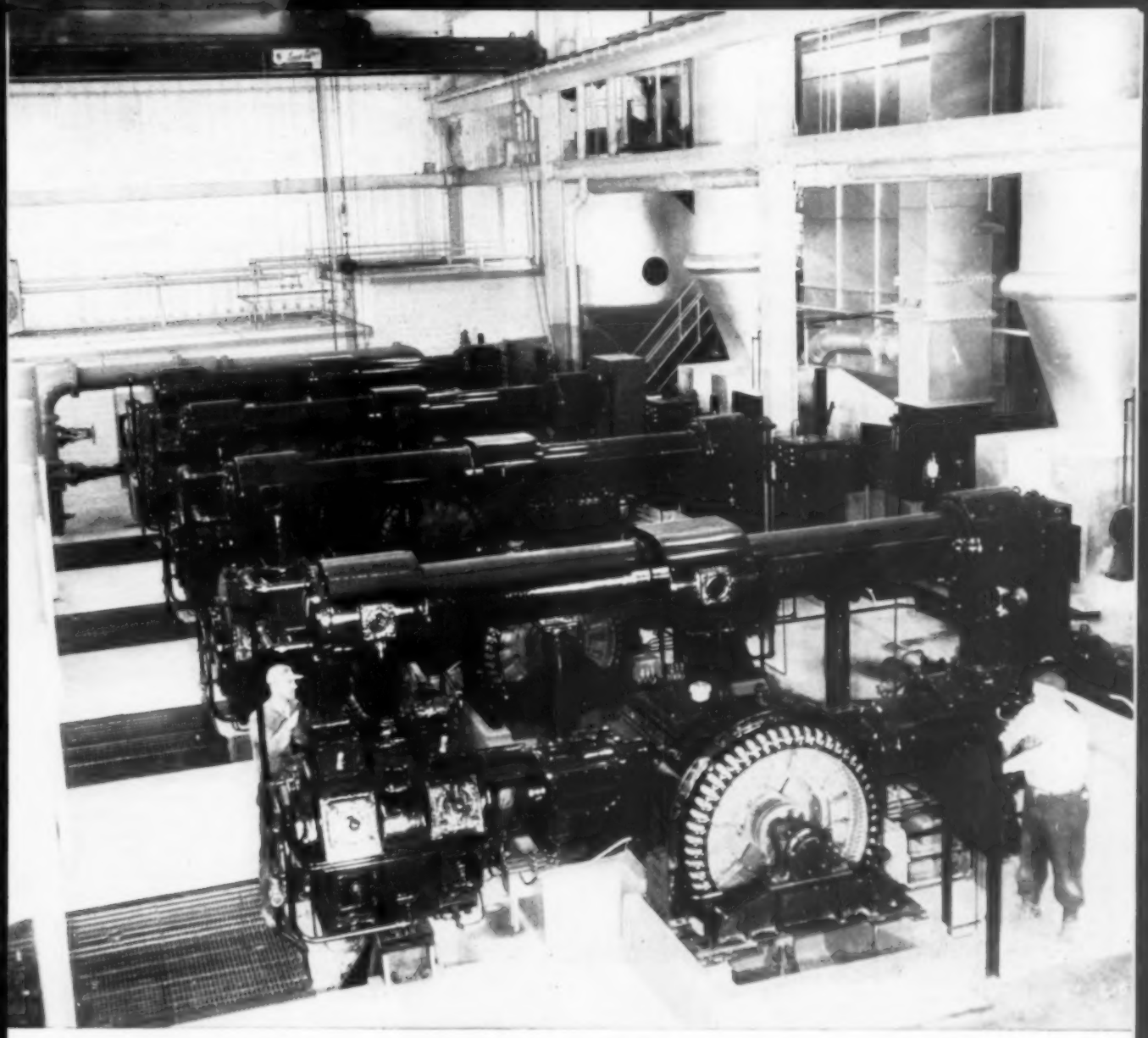
As manager of the Dallas Branch, Mr. Bartlett will be under the supervision of the District management, comprising **A. A. Burrell,** Vice President and Southwestern District Manager, and **C. H. Sanders,** Assistant Southwestern District Manager.

Cooper-Bessemer's Dallas Branch and Southwest District Management Offices are located at 1318 Fidelity Union Life Building, Dallas 1, Texas.

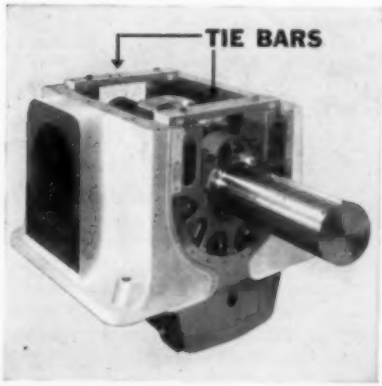
New Chemstrand President

At a recent meeting the Board of **The Chemstrand Corporation** elected **Edward A. O'Neal, Jr.** President to fill the vacancy created by the resignation of Henry H. Bitler of Decatur, Alabama, who is returning to American Viscose Corporation.

Mr. O'Neal, of St. Louis, has resigned as Vice President and Director of Monsanto Chemical Company and will take over his new duties with The Chemstrand Corporation immediately.



You get permanent alignment with these balanced opposed compressors



To assure permanent alignment, mated steel tie bars—machined for precise fit—are locked over each main bearing.

Here's the big difference in opposed compressor design—a Worthington exclusive that gives you permanent frame alignment . . . for longer wearing parts life, less maintenance.

Locked in place over each main bearing is a heavy steel tie bar. This makes the frame strongest at the point of greatest loading, assuring years of heavy duty, continuous operation. When necessary, the tie bars are easy to remove for inspection or maintenance.

Other advantages. The Worthington balanced opposed design is more compact, cutting the amount of foundation and floor space needed and saving installation time and expense. It's highly suited to large horsepower multi-service or multi-stage applications. Up to four cylinder pairs can be arranged on one frame.

For more information, see your nearest Worthington District Office or write to Section K66, Worthington Corporation, Harrison, N. J. K-66

WORTHINGTON

TO GUARD YOUR WORKERS AGAINST SKIN AILMENTS

THEIR HANDS

Powered with ACTAMER* for Dermatitis Control

For easy filling of dispensers VI-LAN CLEAN is provided in polyethylene bags, thru which you may squeeze all or as much as is needed into the dispensers without waste.

Also available is a portable self-service unit, No. 815, equipped with 2 dispensers, 2 Scott industrial wiper brackets, plus a large waste disposal bin of large capacity.

For your convenience, VI-LAN CLEAN also is shipped in pint and quart can containers. Write NOW for descriptive folder and sample.

VI-LAN CLEAN is a degerming cleanser guarding your employees hands and bodies against irritation and infection.

VI-LAN CLEAN is fortified with ACTAMER*, evolved by the Monsanto Chemical Company. It is a potent bacteriostat that reduces resident skin bacteria by as much as 97%.

This emulsion paste cream does what soap and detergents can not do. Non-alkaline and acid free, and whether used "with or without water," it will not in any way effect the insulation value of rubber gloves. It controls dermatitis, and is a preventive of poison ivy and creosote burns.

VI-LAN CLEAN cleanses while it guards hands, face and body against skin contaminations; it removes greases, oils, paints, acids, epoxy resins, glues, printing inks, asphalt, thinners, crater compounds, rubber and gasket cements. It is non-irritating. It contains lanolin to restore natural skin qualities.

For safety's sake, for cleanliness, to prevent skin ailments and lost man hours, absenteeism and expensive compensation claims, give your employees the benefits of VI-LAN CLEAN.

Place VI-LAN CLEAN dispensers on your trucks and other service units, and the larger self-service units in all wash rooms and in critical on-the-job locations, to economize and to speed up your employees wash-ups. There is nothing like it anywhere.

DAMERON enterprises, inc.
427 So. 20th Street
Louisville 3, Kentucky

News (Continued)

A.S.M.E. Nominates 1956-57 National & Regional Officers

William F. Ryan, vice president, director, and senior consulting engineer of **Stone & Webster Engineering Corporation,** Boston, has been nominated to serve as the 1956-57 president of **The American Society of Mechanical Engineers.** He will be installed at ASME's annual meeting in New York in November, after a letter ballot of the organization's 41,000 members.

Also nominated were the following: as technical director, **Eugene W. Jacobson,** chief design engineer, **Gulf Research & Development Company,** Pittsburgh; and as administrative director, **V. Weaver Smith,** vice president in charge of contracts, the **Lummus Company,** New York, N. Y.

Nominations for four of the Society's eight regional vice presidencies are as follows:

Region II (comprising parts of New Jersey and New York, including New York City), **William H. Byrne,** president and chairman of the board, **Byrne Associates, Inc.,** New York.

Region IV (comprising Mississippi, Florida, Georgia, South Carolina, North Carolina, Tennessee, and Alabama), **James H. Sams,** dean of engineering, **Clemson College,** Clemson, South Carolina.

Region VI (comprising Indiana, Iowa, Illinois, Kentucky, Wisconsin, Minnesota, Nebraska, the Dakotas, most of Missouri, and southwestern Ohio), **Rolland S. Stover,** owner, **R. S. Stover Company,** Marshalltown, Iowa.

Region VIII (comprising Kansas, Oklahoma, Arkansas, Texas, Louisiana, New Mexico, Colorado, Wyoming, part of Missouri, and the Republic of Mexico), **Clifford H. Shumaker,** chairman, Department of Industrial Engineering, **Southern Methodist University,** Dallas, Texas.

C & D Batteries — Dallas

Devon D. Gilman is handling battery service in the Dallas, Texas, area for **C & D Batteries, Inc.,** of Conshohooken, Pa. Gilman will work out of the offices of A. N. Ohlfest, area sales representative for the firm.

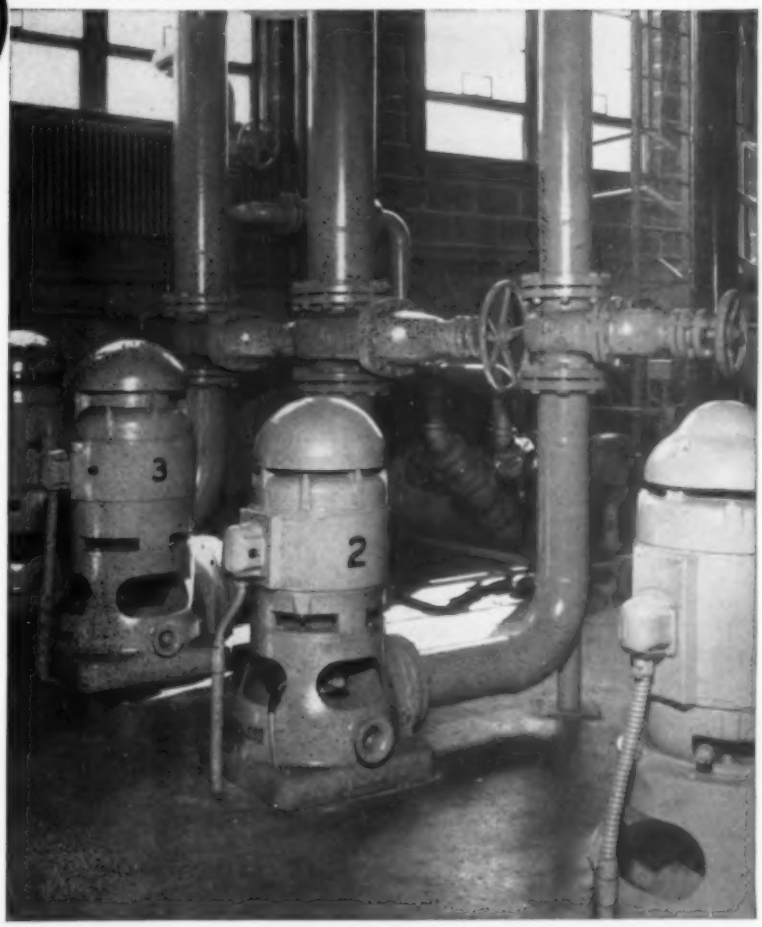
Vertical Versatility

IN PUMPING LIQUIDS FROM SHORT SETTINGS

PEERLESS PUMPS

PEERLESS INDUSTRIAL SERVICE PUMPS

3 PRODUCTION DESIGNS . . . Standard, Heavy-Duty and Special Service Types Provide Widest Flexibility in Application



Single and Multi-Stage Units Available Engineered to the Individual Application

Advantages and Features of the Peerless Vertical Industrial Service Pump

→ **SAVES ON PIPING**—Eliminates suction piping.

→ **ALWAYS PRIMED**—Once installed, always primed.

→ **SPACE SAVING**—Requires minimum floor space.

→ **ALL TYPES OF DRIVES**—Leading makes of electric hollowshaft and solid shaft motors; right angle gear drives; vertical and horizontal steam turbines.

→ **IMPROVED SUCTION**—New bell mouth suction manifold immeasurably improves water entrance conditions.

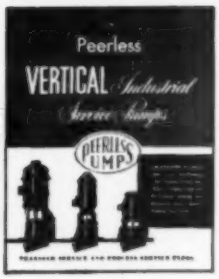
→ **HIGHEST EFFICIENCIES**—Peerless advanced vertical turbine design records highest in pump efficiencies.

→ **FLEXIBILITY**—Easiest to adapt to future system needs.

→ **COMPLETE LINE**—Peerless makes available broadest range of vertical turbine pump capacities, head conditions and horsepowers offered by any manufacturer. Capacities: 30 gpm to 40,000 gpm. Heads: up to 1000 feet. Electric drive up to 2500 hp.

NEW BULLETIN—FREE! JUST FILL OUT COUPON AND MAIL TODAY

New 16-page bulletin is profusely illustrated, describing completely all 3 Peerless types. Contains new engineering data on sump designs, etc. Write today for your copy.



PEERLESS PUMP DIVISION
Food Machinery and Chemical Corporation
Address inquiries to Factories at:
Los Angeles 31, Calif.; Indianapolis 8, Ind.
Offices: New York, Indianapolis, Chicago, St. Louis, Atlanta, Dallas, Plainview, and Lubbock, Texas; Fresno, Los Angeles, San Francisco, Phoenix, Albuquerque.
Distributors in Principal Cities:
Consult your Telephone Directory.

PEERLESS PUMPS fmc

PEERLESS PUMP DIVISION
Food Machinery and Chemical Corporation
301 West Avenue 26
Los Angeles 31, California

Please send copy of Industrial Service Pump Bulletin No. B-505

NAME_____

COMPANY_____

STREET_____

CITY_____ STATE_____

SP&I

A

new freedom

IN THE USE OF BEARINGS

"Bunting Bearings" means fine bearings to machinery manufacturers, engineers and mechanical maintenance men. Bunting Cast Bronze is the outstanding metal in the field of general purpose bearing applications. Now the same high standards of manufacturing and distribution are available in a standardized line of Bunting stock sintered powdered plain and flange bearings, thrust bearings and bars.

You can choose the Bunting Bearing that exactly meets your needs. Bunting Stock Cast Bronze Bearings and Bars are available in many hundreds of sizes for all mechanical requirements. Bunting stock sintered powdered self-lubricating Bearings are available in a far greater range of standard sizes than ever before. Each embodies traditional Bunting quality.

BOTH Bunting Cast Bronze and Bunting oil filled, self-lubricating sintered powdered Bronze Bearings and Bars are available to you through your nearest Bunting Distributor. He has in stock all sizes for your immediate needs. Ask him or write for complete lists and dimensional data on Bunting Cast Bronze and Bunting Sintered Bronze Bearings.

Bunting®

BUSHINGS, BEARINGS, BARS AND SPECIAL PARTS OF CAST BRONZE AND POWDERED METAL

The Bunting Brass and Bronze Company, Toledo 1, Ohio
Branches in Principal Cities • Distributors Everywhere

All-State Welding Southern Gulf States

Robert Nordin, 3600 Griggs Road, **Houston, Texas,** has been appointed

Regional Manager for **All-State Welding Alloys Co., Inc.,** to cover the Southern Gulf States (La., Miss., East Texas, Southern Alabama and the Panhandle of Florida).

Mr. Nordin is responsible for sales and service to the users and distributors of All-State Alloys and Fluxes in his area. He will be the contact man for All-State's metallurgical resources and experimental laboratory, which provide technical assistance for the solution of all manner of problems having to do with the welding, brazing, soldering, tinning and cutting of metals for maintenance, reclamation, construction, and production of metal parts and equipment.

Leslie Co.—Sls. Mgr. Board

The election of **S. E. Abernathy,** prominent Kingsport manufacturer's representative, as Chairman of the Sales Management Board of **Leslie Co.,** Lyndhurst, N. J., has been announced by John S. Leslie, President of the Lyndhurst, N. J. steam regulator and controller manufacturing firm.

Mr. Abernathy, who has been a representative for Leslie Co. equipment in marine and industrial markets since 1947, is President of the **Abernathy-Thomas Engineering Co. of Kingsport, Tennessee,** and **Decatur, Georgia.**

Others who were elected to offices on the Leslie Co. Sales Management Board are John N. Fehlinger, of New York City, Vice Chairman, and William M. Priestley, Secretary, who is Sales Correspondent Supervisor, at Leslie Co.'s Lyndhurst, N. J. plant.

New DynAC® stops motors *instantly*...without a ripple!

Here's dramatic proof of the smooth, controlled braking action of the new Westinghouse DYNAC braking controller. Motor stopped *instantly*—without disturbing the water in the glass goblet. "Grabbing" or jerky stops are eliminated with DYNAC braking.

Wherever rapid and/or controlled stopping is required, DYNAC can not only contribute an important safety factor, but it can save you headaches—*and money*—on: (1) production time, (2) material rejects and spoilage, and (3) maintenance expense.

Because it's *completely* electrical, DYNAC requires no mechanical apparatus or motor linkage—it simplifies maintenance. And it comes in *one* compact, spacesaving enclosure. Get the facts on DYNAC's many cost-cutting applications—with every type of standard induction motor. Use the coupon below for more information on DYNAC. J-30200

YOU CAN BE **SURE**...IF IT'S

Westinghouse

WESTINGHOUSE ELECTRIC CORPORATION
P.O. Box 868, Pittsburgh 30, Pa.

Please send me descriptive bulletins 15-600 and B-6572 on the new DYNAC braking controller.

Name_____

Company_____

Address_____

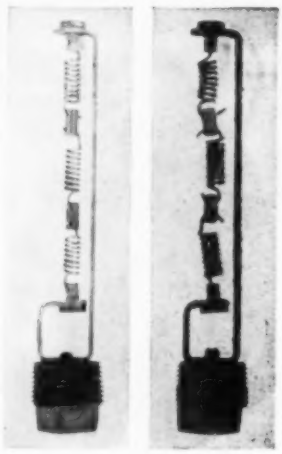
City_____ State_____

BIRD-ARCHER Amine Treatment
INSURES LONGER LIFE FOR PIPE

Return line corrosion is one of the most critical problems in maintaining economical, efficient power plant operation.

Bird-Archer Amine Treatment is an easy, effective and economical way to eliminate corrosion troubles. Amines raise the pH value of the return condensate to the point whereby the corrosion potential is negative. In addition, amines provide a surface protection for the metal itself which further inhibits corrosion. In scores of plants, Bird-Archer Amine Treatment is paying a profit on its cost through savings in piping replacement and maintenance work.

To demonstrate what corrosion can do in steam and condensate return lines, we show here "before" and "after" unretouched photographs of NDHA Corrosion Testers. This is a test* developed by the American Society for Testing Materials in cooperation with the National District Heating Association. Bird-Archer supplies and analyzes these testers. Photo at left shows a Tester before installation. Photo at right shows a Tester after it had been installed for 60 days in the return line. (*Standard Method of Corrosivity Test of Industrial Water, NDHA Method, ASTM Designation 935-49.)



Write for BULLETIN CP-100 AND THE NAME OF THE BIRD-ARCHER SERVICE ENGINEER NEAREST YOU.

Send for Catalog on Bird-Archer Proportioning Pumps

BA 602

LABORATORIES ENGINEERS-CHEMISTS

BIRD-ARCHER
WATER TREATING ENGINEERS

THE BIRD-ARCHER COMPANY, 4337 N. AMERICAN ST., PHILADELPHIA 40, PA.

New York, Chicago
The Bird-Archer Co. of California, 881 Mission St., San Francisco
Offices also in Canada and Mexico

Westinghouse—Transformer Plant in Athens, Ga.

Westinghouse Electric Corporation plans to construct a multi-million dollar distribution transformer plant in **Athens, Ga.**

O. O. Rae, vice president in charge of the company's Southeastern region, said the new plant will be part of the Transformer Division which is headquartered in Sharon, Pa.

"Additional manufacturing facilities are needed," Mr. Rae said, "to meet the constantly growing market for pole - type distribution transformers. The new plant will approximately double the output of present facilities in this department at Sharon."

The Westinghouse executive pointed out the Sharon production of this type of transformer will continue and "there will be no material effects in the manufacturing operations" at that plant.

At the same time, Mr. Rae announced that **Gordon C. Hurlbert,** manager of the distribution transformer department at Sharon, has been named manager of the new plant. He will continue to be responsible for distribution transformer operations at Sharon.

Construction of the new plant, located on a 252 acre site on Newton Bridge Road and near the Southern Railroad tracks just north of the Athens city limits, will begin immediately. The building will be a one-story structure containing approximately 750,000 sq ft, of which 633,000 will be devoted to manufacturing space.

When operating under capacity conditions, which is expected to be by 1960, the plant will employ about 1200 people, Mr. Rae said. Actual production is scheduled to begin in mid-1958.

"Only some key engineering, sales and administrative personnel from Sharon will be transferred to the Athens location," he stated. "All production employees will be hired from Athens and surrounding communities."

Mr. Hurlbert is a native of Raymond, S. D., and was graduated from Marquette University in 1946 with a bachelor of science degree in mechanical engineering. He joined the Westinghouse graduate student training program in October of that year and held various positions in the engineering section at Sharon as well as assignments in the purchasing departments at Lima, Ohio, Pittsburgh headquarters and South Philadelphia.

Powell Lubricated Plug Valves

Fig. 3059 (Sectional) A.S.A. 300-pound Steel Lubricated Plug Valve

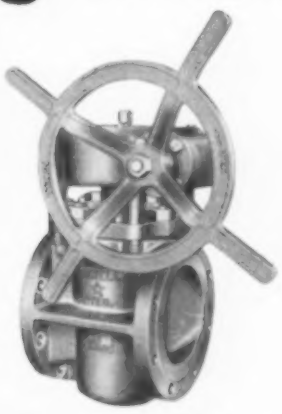


FIG. 1559G—150-pound Steel Lubricated Plug Valve. Gear operated

FIG. 2200—175-pound W.O.G. Semi-Steel Lubricated Plug Valve

Powell Lubricated Plug Valves maintain the 110-year tradition of quality and precision. Only the finest available materials are used. And painstaking quality control is rigidly enforced through each and every step of manufacture.

Valve users who want one source of supply for lubricated plug as well as all types of bronze, iron, steel and corrosion-resistant valves will want full details on Powell Lubricated Plug Valves.

For example, features include quick and positive operation—just a quarter-turn to open or close. Lubricant grooves surrounding each port provide a positive seal when the valve is closed. In an open position, seating surfaces are not exposed. Available in Steel and Semi-Steel through distributors in principal cities.

For full details, write for the new PV-4 Catalog on Powell Lubricated Plug Valves. Just fill out the coupon and mail. Of course there's no charge, no obligation.

THE WM. POWELL COMPANY
2525 Spring Grove Ave.
Cincinnati 22, Ohio

Gentlemen:

Please send me a copy of your PV-4 Catalog on Powell Lubricated Plug Valves. It is understood that there is no cost, no obligation.

*name*_____

*title*_____

*company*_____

*city*_____

*zone*_____ *state*_____

The source of supply for all valve needs!

POWELL VALVES...110th YEAR

BRONZE, IRON, STEEL AND CORROSION RESISTANT VALVES.

... make every step a safe step

BLAW-KNOX ELECTROFORGED® STEEL GRATING and STAIR TREADS

On stair treads, walkways, catwalks, platforms and floors—both indoors and outdoors—you can provide safe walking conditions. For Blaw-Knox Electroforged Steel Grating brings you these exclusive features:

1. rigid one-piece construction—easy to install
2. non-slip twisted crossbar—for safe footing
3. three types of bearing bars
   - square bars—for smoothest walking surface
   - knurled bars (Furro-Grip)—for extra safety plus relatively smooth walking surface
   - serrated bars—for maximum safety under extremely hazardous skid conditions
4. no sharp corners to clog—self-cleaning
5. all surfaces accessible—easy to paint
6. maximum open area—for light and ventilation

Write for your copy of new Bulletin No. 2486 —or send dimensional sketch for quotation.

BLAW-KNOX

BLAW-KNOX COMPANY

BLAW-KNOX EQUIPMENT DIVISION

Pittsburgh 38, Pennsylvania

GRATING APPLICATIONS: floors • platforms • walkways • catwalks • stair treads • fan guards • shelving • and many other uses, both outdoors and indoors, for versatile steel grating

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News (Continued)

Atlantic Steel's Sarran V. P. of Warehouse Assoc.

M. C. Sarran, manager of **Atlantic Steel Company's** Warehouse Division, Atlanta, Ga., has been elected vice president of the American Steel Warehouse Association. This announcement was made following the 47th annual convention of the Association in San Francisco.

The American Steel Warehouse Association is a national organization with 517 member companies operating 820 warehouses in 45 states, Canada, and the Hawaiian Islands. Member companies are divided into 24 regional chapters. Mr. Sarran is also director of the Southern Chapter, comprised of iron and steel distributors in nine Southeastern states.

Clark Equipment—Houston

Madden Equipment Corp., 7919 Gulf Freeway, **Houston, Texas,** has been appointed to sell and service the fork-lift trucks, straddle carriers and powered hand trucks produced by the Industrial Truck Division of **Clark Equipment Company.**

The firm will serve the territory formerly handled by T. G. Frazee and Industrial Truck Service Co.

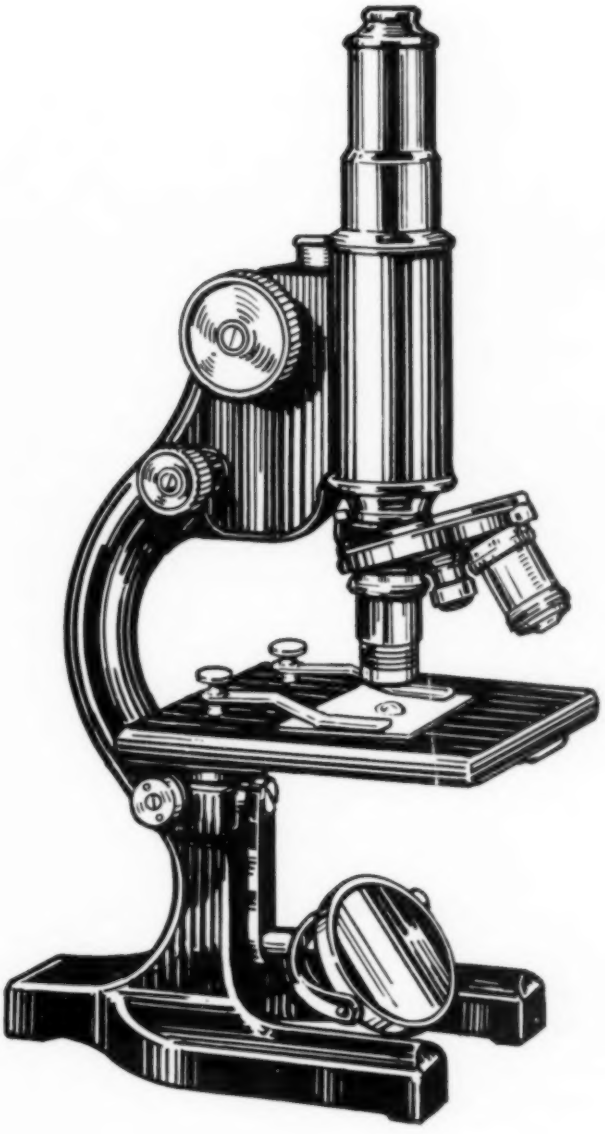
Ray E. Madden, at one time assistant sales manager for Clark, heads the new dealership. Other officers are **George Elam,** vice president and sales manager, and **Robert L. Lee,** secretary-treasurer.

Ted K. Sleeper, former head of Industrial Truck Service Co., will be parts manager. **Vic Webb** is service manager and **Ed Justes** is customer service manager.

C&O Fuel Service

G. G. Ritchie, Coal Traffic Manager-Engineering, **The Chesapeake and Ohio Railway Company,** recently announced the appointment of **Carl S. Dennis** as Fuel Service Engineer, **Richmond, Virginia;** and **John F. Walser,** Fuel Service Engineer, **Greensboro, North Carolina.**

C&O fuel service engineers offer free coal counseling to Southern industry — advising on the selection, transportation and utilization of the right coal for the right purpose.



In Water
it's often what you can't see that hurts you!

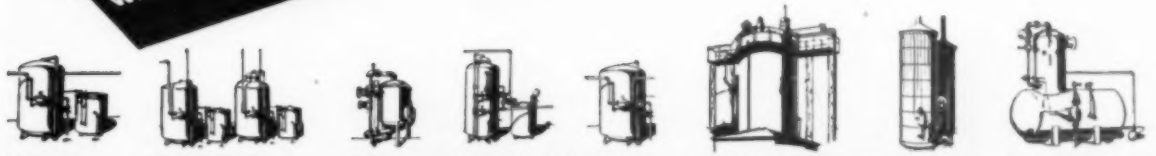
Anyone concerned with water-using equipment is perfectly aware that you can't see the dissolved minerals in ordinary water... the kind of water that can cause trouble and expense wherever it is used. This is just our way of reminding you that thousands of plants, institutions and other water users throughout the country are avoiding trouble and expense with Elgin Water Conditioning equipment.

Based upon scientific water analysis and a thorough study of your problem, Elgin will submit a complete proposal covering the type of water treating system which will give you the best and most economical service. This may mean simply ion-exchange softened water. Or, maybe analysis indicates need for dealklization, neutralization or silica and CO_2 removal. At the other extreme, your operations may require water free of all minerals, alkalinity, acidity, gases ... in short *chemically pure water* by means of deionizer equipment.

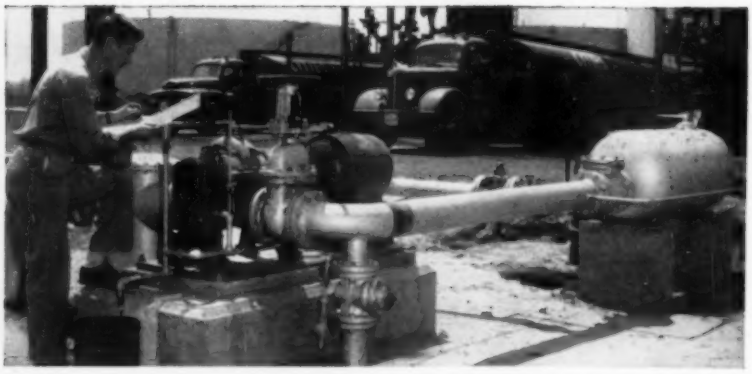
Whatever the case may be, Elgin equipment and Elgin water treating methods, plus Elgin experience and skill, can solve your problems... with maximum efficiency at minimum cost. Talk over your water problems with the Elgin representative in your vicinity who can put at your disposal all the skill and knowledge of Elgin's half-century of service. Or write us direct.

ELGIN WATER CONDITIONING SINCE 1906

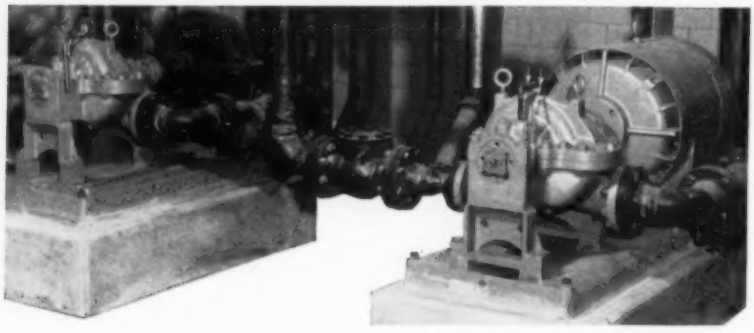
ELGIN SOFTENER CORPORATION
132 No. Grove Avenue, Elgin, Illinois
Representatives in Principal Cities
In Canada: G. F. Sterne & Sons Ltd., Brantford



SOFTENERS | ION EXCHANGERS | FILTERS | DEIONIZERS | DEALKALIZERS | LIME COAGULATORS | DEGASITORS | DEAERATING HEATERS



They needed pumping capacity



They needed pumping pressure

You can have capacity . . . or pressure . . . or both

You can meet an exceptionally wide range of pumping needs with just two types of Goulds pumps.

For volume pumping—33 sizes of the Fig. 3405 single-stage, double-suction pump provide capacities up to 6400 GPM, heads up to 425 ft.

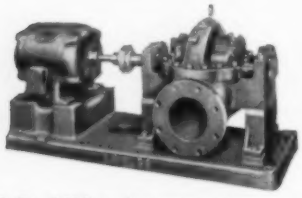
For great pressure—5 sizes of the Fig. 3305 two-stage pump provide heads up to 1000 ft., capacities to 1200 GPM.

All these *extra* features are *standard* on both groups:

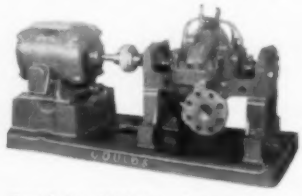
1. Bearing housings sealed against dust and moisture.
2. Renewable stuffing box bushings.
3. Die-formed stuffing box packing.
4. Cowl-type glands for use with quenching fluids.
5. Corrosion resistant gland bolts.
6. Stainless steel impeller rings.
7. Teflon water seal rings.

Because so many parts on these pumps are interchangeable—you can cut parts inventory in two or better.

For further information write for Bulletin 721.6 on the Fig. 3405; Bulletin 722.6 on the Fig. 3305.



Goulds Fig. 3405 single-stage pump.



Goulds Fig. 3305 two-stage pump.

MEMBER HYDRAULIC INSTITUTE

Goulds PUMPS INC. Seneca Falls New York

SALES OFFICES: Atlanta • Boston Chicago • Houston • New York Philadelphia • Pittsburgh • Tulsa

Lockheed's Georgia Nuclear Facility

Lockheed Aircraft Corporation's Georgia Division has announced the architect and engineering firm for the nuclear aircraft test facility to be built near **Dawsonville, Ga.,** and has disclosed that **General Electric** will build reactors for the research center.

Announcement was made in April that Lockheed will operate the facility for research and development in connection with the nuclear aircraft program of the United States Air Force.

The Vitro Engineering Corporation of New York will be responsible for design and engineering of all buildings, warehouses and access roads on the 10,000 acre site.

Richards and Associates of **Carrollton, Ga.,** will construct the basic power supply and distribution system for the research laboratories. This includes all transmission lines and necessary sub-stations. Amount of the contract is approximately $176,000.

MacDougald Construction Company of Atlanta was successful bidder on the construction of roads and bridges on the site. This work will total approximately $670,000.

Included in the road building contract is 10 miles of macadam roads with asphalt top within the nuclear site; construction of two steel bridges; culverts and drainage sewers.

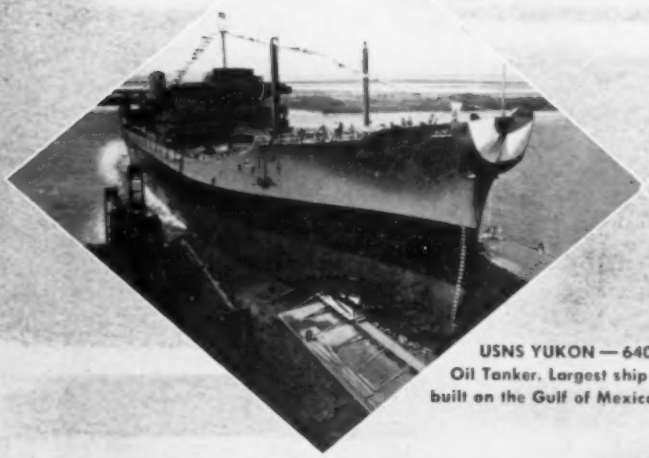
While the total number and types of buildings was not disclosed, plans call for the construction of two buildings at the junction of the Amicalola and Etowah rivers. One will be a pumping station and the other will house a clarifying filter to remove all impurities from water used in the reactors before it is returned to the rivers.

Two G-E test reactors will be used by Lockheed scientists and technical research teams. Work on these is underway at General Electric.

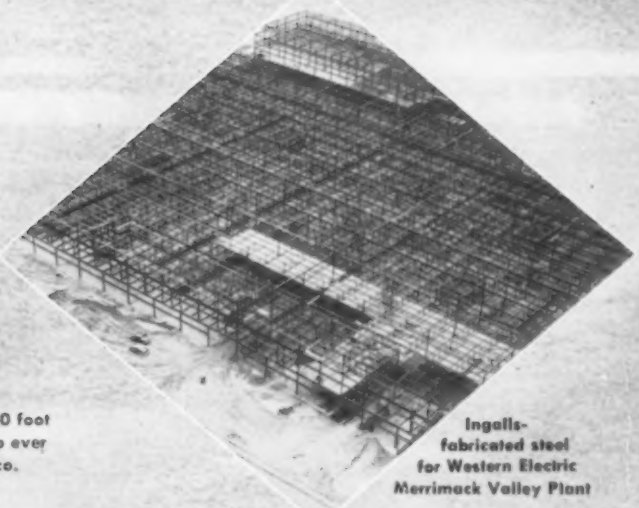
The entire nuclear facility, to be constructed and operated for the U. S. Air Force by the Lockheed Aircraft Corporation's Georgia Division, is scheduled to be in operation by the latter part of 1957.

While construction is underway, training of scientific personnel will continue at Lockheed's Georgia Division and at the General Electric plant at San Jose, California.

Vitro personnel have established an office at Dawsonville.



USNS YUKON — 640 foot Oil Tanker. Largest ship ever built on the Gulf of Mexico.



Ingalls-fabricated steel for Western Electric Merrimack Valley Plant

THE **INGALLS** COMPANIES

Ingalls serves both industry and government, in widely separate fields. Ingalls' KNOWLEDGE of all these fields was earned through practical, intense, hard-working years. This knowledge is at your service today.

SHIPBUILDING: The Ingalls Shipbuilding Corporation has built such outstanding ships as the USS *Glacier*, plus many types of tankers, naval vessels, passenger liners, cargo vessels, barges, rigs, towboats and yachts.

STEEL FABRICATION: The Ingalls Iron Works Company is a major nation-wide fabricator of steel for power houses, all types of buildings, bridges, and any special applications.

No. 8 unit of Alabama Power Co., Gorgas, Alabama — fabricated and erected by Ingalls

VERSATILITY IS **INGALLS'** KEYNOTE!

PLATE AND TANK WORK: The Birmingham Tank Company, an Ingalls subsidiary, furnishes oil storage tanks, pressure vessels, bins, stacks, rotary kiln dryers, ducts, flues, and blast furnaces; fabricates steel, aluminum, stainless steel, other alloys.

STEEL ERECTION: The Ingalls Steel Construction Company erects structural framework for buildings, power houses, tanks, bins and stacks.

We invite you to write for special literature on any or all of these subjects.

BIRTANKS ready for fast delivery — to job-site if desired

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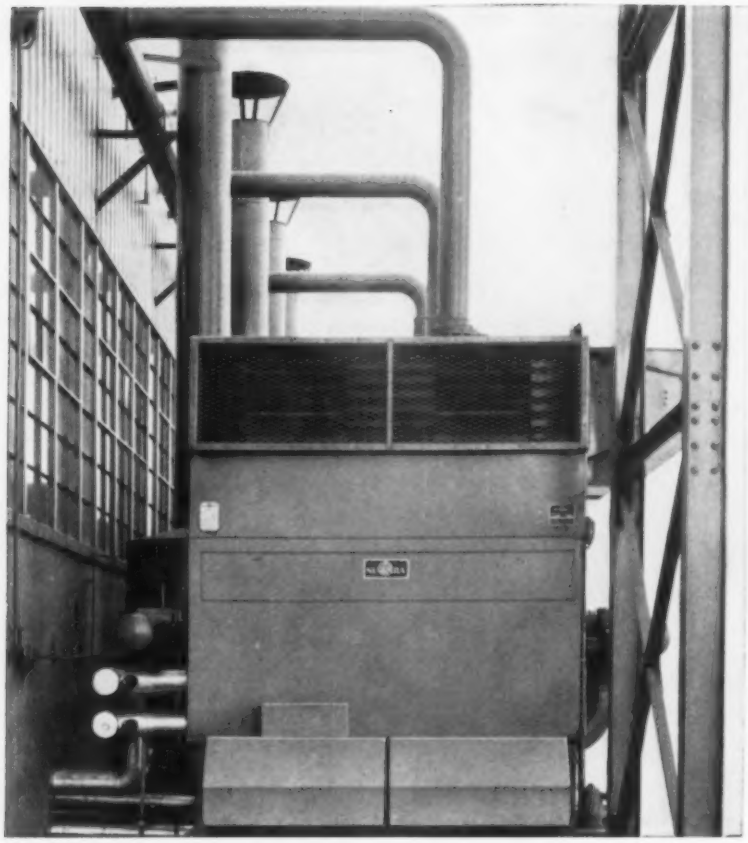
BIRMINGHAM TANK COMPANY
Sales Offices: New York, Chicago, Pittsburgh, Houston, Atlanta, New Orleans, Pascagoula.

THE INGALLS IRON WORKS COMPANY
Sales Offices: New York, Chicago, Pittsburgh, Houston, Atlanta, New Orleans.

THE INGALLS STEEL CONSTRUCTION COMPANY
Sales Offices: New York, Chicago, Pittsburgh, Houston, Atlanta, New Orleans.

HOW YOU SAVE . . .
Getting Drier Compressed Air



Save the cost of Cooling Water and you save the price of the NIAGARA AERO AFTER COOLER (for compressed air or gas) in less than two years.

● Extra, for no cost, you get drier compressed gas or air for your process. You get better operation and lower costs in the use of all air-operated instruments, machines, or paint sprays. You save expense for piping, pumping, water treatment and disposal. You get the use of badly needed water elsewhere in your plant.

Niagara Aero After Cooler cools compressed air or gas (evaporatively) below the temperature of surrounding atmosphere, with no further condensation in your air lines.

Write for complete information; ask for Bulletin 130, or contact nearest Niagara Engineer if you have any problem involving the industrial use of air.

NIAGARA BLOWER COMPANY
Dept. S.P., 405 Lexington Ave. New York 17, N. Y.
Niagara District Engineers in Principal Cities of U. S. and Canada

News (Continued)

D. G. Moon is V.P. of Sirrine

D. G. Moon, who has been acting as Consultant and Head of the Pulp and Paper Department of **J. E. Sirrine Company,** has been elected a Vice President of that company.

A graduate of the City of London Technical Institute, Mr. Moon obtained his early experience generally in the design and construction of a number of hydro-electric plants in Wisconsin. After service in World War I as a Major in the U. S. Engineers Corps, he was Chief Engineer of Continental Paper & Bag Corporation, and subsequently was in the manufacturing department of the International Paper Company.

Moving to the South in 1936, Mr. Moon was associated with the initial developments for the Union Bag & Paper Corporation at Savannah. He joined the staff of J. E. Sirrine Company in 1939, which company has been responsible for the engineering for many of the Southern pulp and paper mills, as well as those in other sections of the country.

Mr. Moon will continue in his present capacity as Head of the Pulp & Paper Department of Sirrine Company, Greenville, South Carolina.

Manning, Maxwell & Moore Expands Southwest Operations

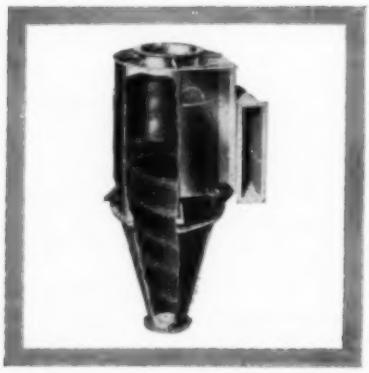
Manning, Maxwell & Moore, whose products are sold through leading industrial distributors, has opened a new and modern district office in the Homco Industrial District of **Houston** at 6711 Supply Row. According to company officials, this expansion will aid its distributors increase their service throughout Texas and the Gulf Coast.

The new district office, containing over 7,000 sq ft of space, includes service facilities and factory equipment for assembling and testing safety valves and other products. It will also supplement the large and diversified stocks carried by the Company's distributors.

Products include Ashcroft Gauges, Consolidated Safety & Relief Valves, American Industrial Instruments, Shaw-Box and Load Lifter Cranes, Budgit Hoists, American-Microsen Electronic Process Control Instruments and aircraft control components.

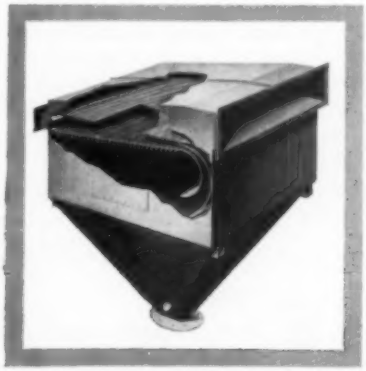
How Buell's Exclusive Rapping Mechanism delivers Extra Dust Collection Efficiency

ORDINARY RAPPING
Shakes dust from collecting electrodes. Re-entrainment of cloud of dust reduces precipitator efficiency
BUELL RAPPING
Shears dust from collecting electrode surface, minimizes scattering and re-entrainment.



Buell Cyclones offer two "extra-efficiency" advantages: (1) exclusive Shave-off which harnesses double-eddy and puts it to work, and (2), large diameter design which eliminates clogging.

Complementing the extra efficiency of rapping in Buell "SF" Electric Precipitators, the unique Spiralectrodes add further efficiency through 50% to 100% higher electron emission, constantly accurate spacing, longer electrode life.



Buell's Low Resistance Fly Ash Collector combines top efficiency with low draft loss, for natural or forced draft installations. Ideal for boilers from 100 to 2000 BHP.

For more specific data about Buell's *extra efficiency*, write Dept. 80-J, Buell Engineering Company, 70 Pine Street, New York 5, N. Y.

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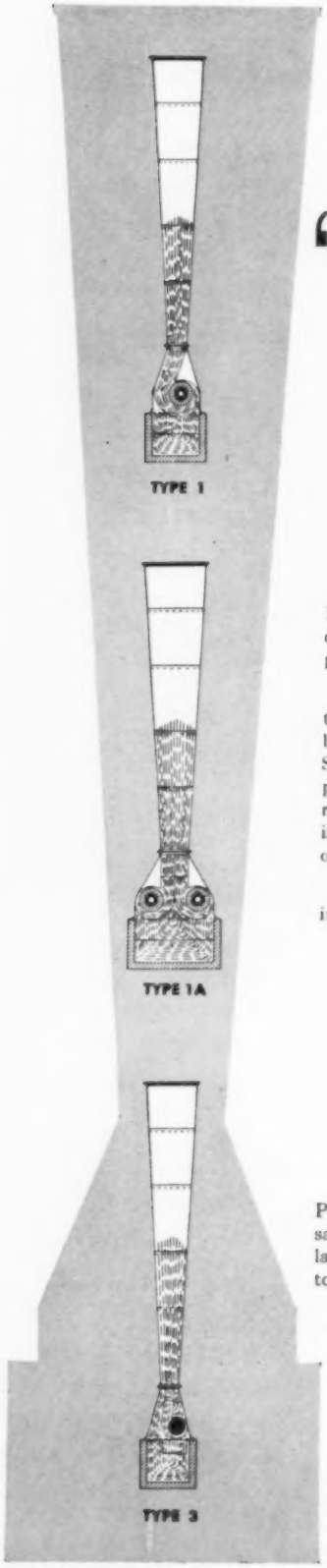
MECHANICAL ELECTRICAL

Experts at delivering Extra Efficiency in **DUST COLLECTION SYSTEMS**



THE

"compleat"

STACK

INTEGRATED FAN, BREECHING AND STACK SELF SUPPORTING

P-D's single responsibility for draft production greatly simplifies your engineering problems.

P-D Fan Stacks are a completely integrated apparatus, consisting of I-D fan, breeching, and stack in a single unit. Straight through breeching assures high, predeterminable efficiency. Structural steel requirements are reduced and installation is simplified. Stack may be mounted directly on boiler steel where desirable.

Three basic types provide a wide latitude in application:

TYPE 1 Single I-D fan handles total gas.

TYPE 1A—Twin I-D fan for widely varying loads . . . as a standby fan . . . or for handling two boilers with a single stack.

TYPE 3—A small fan ejector in throat of stack handles portion of gas only. Patented tuyere controls ejector nozzle for load variation.

P-D Fan Stacks will give you substantial savings in original investment and installation costs. Write our Project Engineers today. Ask for Bulletin 1-PCD-1.

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POWER DIVISION: Tubular Dust Collectors, Forced Draft Fans, Air Preheaters, Induced Draft Fans, Fan Stacks

Alvey Conveyor—Atlanta

Alvey Conveyor Manufacturing Company, St. Louis, has named **L. F. Shattuck** as the company's new representative for **Atlanta, Georgia.**

Mr. Shattuck has extensive and varied packaging experience covering a period of more than 30 years. Mr Shattuck's office address in Atlanta is 1299 West Peachtree Street, N. W.

Magnus Chemical V.P. Named NAPE Officer

Announcement has been made by the **National Association of Power Engineers** with Headquarters in Chicago, of the election of **J. "Dud" Dudley Holmes** as National Vice President. NAPE is the oldest association of power engineers in this country, having been founded in 1882 with a present membership of 14,000 members and 170 chapters throughout this country. The election was made at the annual meeting of the association held recently at the Hilton Hotel in Ft. Worth, Texas.

Mr. Holmes has been associated with the power plant field for over thirty years, fifteen with Magnus. As Vice President in charge of the Marine, Power Plant and Export Division of **Magnus Chemical Company, Inc.,** he has spent a great part of his time traveling throughout the world.

Mr. Holmes has pioneered in building a world-wide organization for effective servicing of marine and power plant operations. With this background he has established within the last two years for NAPE a unique educational plan in cooperation with the University of Wisconsin.

A series of highly effective correspondence courses has been developed to assist the 14,000 members of the association to improve their standards and broaden their knowledge of technical aspects of their field. The subjects of these home study courses are power plant engineering (elementary, intermediate, advanced stages); refrigeration; air conditioning, mathematics (high school and college level); physics (high school and college level); chemistry (high school and college level). Anyone wishing to obtain further information on this educational program should contact Mr. J. D. Holmes, c/o Magnus Chemical Company, Garwood, N. J.

VOTE + but

Study the issues and the candidates— and then decide where you stand

You wouldn't buy a new car without at least driving it around the block.

You wouldn't buy a new house without checking up on the neighborhood, the schools, and any back taxes.

So vote—but don't vote in the dark in this exciting election year.

Listen to what candidates are saying on TV and radio.

Read your newspapers—especially the political news and editorial page.

Talk things out with your neighbors over the back fence and at the filling station on the corner. Take part in the discussion group at your church, club, lodge, or school.

Think about the issues and the candidates—and then make up your own mind. Remember, nobody is in that voting booth but you and your conscience. Step behind that curtain with pride on election day. Then vote as a free American.

VOTER'S CHECKLIST

1. Be sure you're registered.

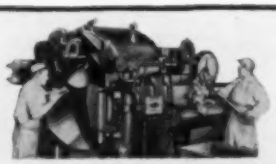
2. Study the issues and candidates. Go to rallies. Ask questions. Read the papers. Listen to speeches.

3. Mark up a sample ballot in advance. (They are published in the papers.)

4. Join your neighbors at the polls on Election Day November 6th.

Is your name in the book?

You can't vote if you're not registered. You lock yourself out of the polls, unless you're a registered voter. And you and only you can get your name in the Registration Book. When they call the roll on election day, will you be there? Do you know anyone who won't?



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—says THE GLOBE COMPANY

"Animal acids and moisture, most harmful to ball and roller bearings prevails in the entire meat packing industry. With conventional lubricants, some of the bearings in our Roto-Cut machines did not last two weeks. Since using Ball Bearing LUBRIPLATE in machines operating continuously 24 hours a day for over two years, we have not had a single bearing replacement."

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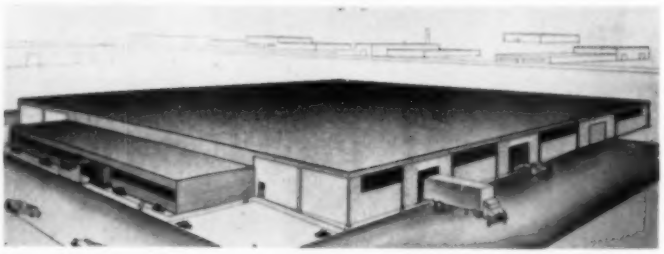
News for the South & Southwest (Continued)



New Plant for Webster Engineering—Tulsa

The Webster Engineering Company of **Tulsa, Oklahoma,** manufacturer of burners for commercial and industrial heating and power boilers, will build a new plant and general offices at 41st St. and Jackson Ave., in a new industrial district of Tulsa.

According to **L. S. Reagan,** company vice president and general manager, the facility will cost around $275,000 exclusive of equipment and other contents. Fabricating plant will house sheet metal, welding, machining, assembly, testing, shipping, receiving and warehouse departments. A laboratory in a second building will contain a variety of boilers for testing purposes.

Webster Engineering's new plant will allow the company to manufacture equipment which previously has been made to specifications elsewhere. **George C. Bergtholdt,** chief engineer, said this would be a gradual process. Webster, a subsidiary of Surface Combustion, serves Southern & Southwestern industry thru organizations in Amarillo, Atlanta, Birmingham, Cincinnati, Corpus Christi, Dallas, Houston, Jackson, Kansas City, Knoxville, Louisville, Lubbock, Memphis, New Orleans, Oklahoma City, Richmond, Roanoke, San Antonio and Wichita.

Hammel-Dahl—Mo. & Kan.

The Hammel-Dahl Company of Providence, R. I., manufacturers of automatic control equipment, announces the appointment of the **George Haynes Company,** 406 West 34th Street, **Kansas City 11, Missouri** as additional sales and service representatives.

This experienced organization will offer the complete sales and service facilities of Hammel-Dahl engineering and products throughout Western Missouri and Northern Kansas.

George Haynes organized his company in 1953. He was graduated from Kansas State College in 1937, with a B.S. Degree in Engineering and Commerce. After military service from 1940 to 1945, retiring as Lt. Colonel, he became associated with Sullivan-Mears until late 1952 when his own company was formed. His ten years of experience have been devoted to the control valves problems in the power plant, refinery and heavy industry fields.

Avisco Cellophane—Atlanta

A new office-warehouse for Avisco cellophane has been opened in **Atlanta, Ga.,** by the **Avisco Film Corporation,** a wholly-owned subsidiary of American Viscose Corporation's Film Division. The large, modern structure at 190 Ottley Drive, N. E., replaces the building at 748 Lee Street, S. W., address.

Forty-six employees occupy the new facilities which cover 36,000 sq ft of office and warehouse space. States covered by the Atlanta office include Florida, Georgia, Alabama, Mississippi, Arkansas, Louisiana, Tennessee, South Carolina, North Carolina and parts of Virginia and West Virginia.

Sales of cellophane in this territory have increased 48 times since the modest first year sales a little over 25 years ago. **Richard E. Reynolds,** manager of the Atlanta operation, joined the company in 1934 and has been in his present post since 1948.

FUTURE EVENTS
of Engineering Interest

Oct. 1-3; 12th Annual Meeting, **National Electronics Conference,** Hotel Sherman, **Chicago, Ill.** Estimated attendance, 10,000, for the nation's leading forum on electronic research, development and application. Victor J. Danilov, Illinois Institute of Technology, Chicago 16, Ill.

Oct. 8-10; 3rd Annual Lubrication Conference, jointly sponsored by **American Society of Mechanical Engineers** and **American Society of Lubrication Engineers,** Chalfonte-Haddon Hall, **Atlantic City, N. J.** Featured will be a review of lubrication problems in nuclear power plants, radiation damage to lubricants and bearing materials, and the use of liquid metals as lubricants, as well as a reporter-type session at which hydrodynamic lubrication will be discussed. R. B. Purdy, Chairman Publicity Committee, ASME, 26 Broadway, New York 4, N. Y.

Oct. 15-17; Northeast Region, **National Association of Corrosion Engineers,** Drake Hotel, **Philadelphia, Pa.** Symposia on protective coatings, metals and alloys, cermets and plastics and the use of statistical methods. A. B. Campbell, Executive Secretary, National Association of Corrosion Engineers, 1061 M & M Bldg., Houston 2, Tex.

Oct. 22-25; Society of Industrial Packaging and Materials Handling Engineers technical short course (Oct. 22-25), 11th Annual National Protective Packaging and Materials Handling Exposition (Oct. 23-25), and National Protective Packaging and Materials Handling Competition, Kiel Auditorium, **St. Louis, Mo.;** G. Cornwall Spencer, 30 N. La Salle St., Chicago 2, Ill.

Oct. 22-26; 44th National Safety Congress and Exposition, Chicago, Ill. Sessions on industrial safety scheduled for Conrad Hilton, Congress, Morrison and La Salle hotels; traffic safety sessions, Congress; commercial vehicle and transit safety sessions, La Salle; farm and school sessions, Morrison; and home safety sessions, Conrad Hilton. R. L. Forney, secretary, National Safety Council, 425 N. Michigan Ave., Chicago 11, Ill.

Oct. 23-26; Symposia are planned on utilities industry, high temperatures, transportation industry, cathodic protection, pipe lines and oil and gas well equipment; **National Association of Corrosion Engineers,** South Central Region, Gunter Hotel, **San Antonio, Texas;** A. B. Campbell, Executive Secretary, National Assoc. of Corrosion Engineers, 1061 M & M Building, Houston 2, Texas.

Oct. 26; Southern Regional Meeting, **Natural Gasoline Association of America,** Captain Shreve and Washington-Youree hotels, **Shreveport, La.** William F. Lowe, 421 Kennedy Bldg., Tulsa 3, Okla.

Nov 1-2; Fifth Annual Instrumentation Conference, School of Engineering, **Louisiana Polytechnic Institute, Ruston, La.** Will consist of technical sessions and exhibits of new equipment in instrumentation and process control. Virgil Orr, Publicity Chairman, 5th Annual Instr. Conf., La. Polytechnic Institute, School of Engineering, Ruston, La.

Nov. 8-9; Southeastern Region Meeting, **National Association of Corrosion Engineers, Charlotte, N. C.** A. B. Campbell, Executive Secretary, NACE, 1061 M & M Building, Houston 2, Tex.

Nov. 26-30; Third International Automation Exposition, Trade Show Building, 500 Eighth Ave., **New York.** Clinics on: electronic computers, process automation, machine tool automation, office automation, automatic materials handling (conveyors), servomechanisms, electromechanical components and electronic components. Harrison Gilmer, 908 Keystone Building, Pittsburgh 22, Pa.

Nov. 26-30, 1956; 22nd National Exposition of Power & Mechanical Engineering in **New York City's** new **Coliseum.** Covers power production, its use, new techniques, economies, and atomic energy; under auspices of ASME; Management — E. K. Stevens, Pres. International Exposition Co., 480 Lexington Ave., New York 17, N. Y.

Nov. 30; Panhandle-Plains Regional Meeting, **Natural Gasoline Association of America,** Herring Hotel, **Amarillo, Texas,** William F. Lowe, 421 Kennedy Bldg., Tulsa 3, Okla.

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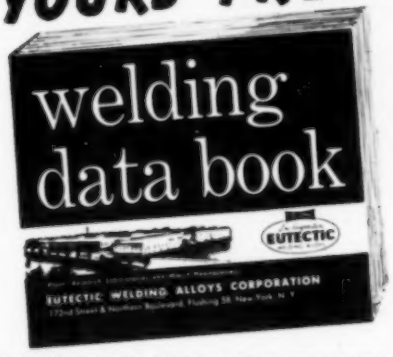

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GIVES YOU A SIMPLE, COST-SAVING DISPOSAL METHOD

• More money is spent for trash disposal through ordinary methods than is generally considered. You cut those costs to the bone when you have a PORTABLE BRULé Trash Burner in continuous operation.

You save frequent handling and cartage costs—insurance premiums can be lowered — you save employee time for more productive work — you keep floor space clear and clean. There are many other benefits you should know.

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PORTABLE
All FG4-T units are portable. Available in 200, 300, and 500 pounds per hour capacity. Each is compact, patented, fast-acting, and specially engineered with our exclusive design and operating features. Interior installations can be made from basement to roof. *Stationary units from 400 to 5000 lbs per hour are also available.*

Some of the features
Walls are air cooled. Preheats combustion air. Secondary air intake insures complete combustion. Step and fire grates assure peak fire chamber temperatures. Stoking eliminated. Feeding is simple. No burning embers or hot ashes can fall on the floor.

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News (Continued)

Subox — New Transformer Finishing Technical Service

Electric utilities and larger industrial establishments have recently found difficulties in obtaining satisfactory contractors with experience and know-how, to strip and flow coat paint on large air-cooled power transformers. Most of these companies hesitate to undertake this work with their own crews due to technical difficulties and knack. Most do not own the necessary equipment and have difficulty specifying and assembling the proper systems.

George Wallace of Salem, Virginia, is now maintained by **Subox, Inc.** and is available on a loan basis to its customers to help them assemble the necessary equipment, to organize crews for them and to train these crews in modern and safe methods of operation for this type of maintenance. While not actively engaged in this instruction work, Mr. Wallace is technical sales representative for Subox products in the **Virginia-Carolina area.**

Cameron & Barkley Co. Now Durabla Distributor

The Cameron & Barkley Co. has been appointed an authorized distributor for the Durabla stainless steel check valve, pump valve and the famous Durabla line of homogeneous compressed asbestos sheets and asbestos fibre gaskets.

The Cameron & Barkley Co., with headquarters at 1104 Prudential Bldg., Jacksonville 7, Florida, serves Southeastern industry thru branches in Charleston, Savannah, Orlando, Tampa and Miami.

Byron Jackson Pumps, Inc.

The sales and service operations for Byron Jackson pump products are now being handled under the name of **Byron Jackson Pumps, Inc.,** a new addition to the Byron Jackson group in Borg-Warner. The formation of the new corporation was announced by E. S. Dulin, president of the Byron Jackson Division of Borg-Warner Corporation.

Lockheed Aircraft Opens Florida Engineering Office

Lockheed Aircraft Corporation's Georgia Division, now heavily engaged in nuclear powered aircraft studies and prop-jet aircraft developments, has established aeronautical engineering offices in Dunedin, in the Tampa-St Petersburg-Clearwater area of Gulf Coast Florida.

Establishment of the West Coast Florida office is another step in the Lockheed Georgia Division's expanding engineering program and the engineers in Florida will be working on aircraft and weapons system design work for advanced aircraft. Approximately 35 engineers will be employed at the Dunedin office during the initial stages of its operation.

Lockheed's Georgia Division is working with the Air Force on nuclear powered aircraft design studies and is building a nuclear powered aircraft development laboratory for the Air Force in the North Georgia mountains at Dawsonville. In addition, America's first prop-jet transport, the C-130 Hercules, is being manufactured at Marietta, Ga., home of the Lockheed Georgia Division. Also B-47 jet bombers are being manufactured and modified at the Marietta plant.

BS & B—Southeast

Black, Sivalls & Bryson, Inc. has announced the appointment of the **Boiler Equipment Service Company,** Box 8188, Station F, **Atlanta 6, Ga.,** as exclusive sales representatives for BS & B automatic controls and safety heads in the State of Georgia and as representative in Florida, excepting the 10 western counties.

Forman is Chf. Eng.—L&N

Appointment of **Howard C. Forman,** Louisville, as chief engineer, has been announced by the **Louisville and Nashville Railroad.**

Mr. Forman succeeds L. L. Adams, who died recently. Succeeding Forman as assistant chief engineer is **G. R. "Dick" Sproles,** also of Louisville. **Claude Johnston,** formerly division engineer at Birmingham, Ala., will fill the vacancy of assistant engineer - miscellaneous - chief engineer's office, Louisville, left by Mr. Sproles.

MEET ATLANTIC STEEL'S WAREHOUSE DIVISION SPECIAL SERVICE FLEET

IN THIS PHOTOGRAPH is the answer to dependable deliveries of steel and aluminum warehouse products. This is Atlantic Steel's fast fleet of trucks, which supplements common carriers and our customers' own trucks.

Manned by intelligent, experienced drivers, who are well-versed in the steel business, these trucks are double assurance of the finest possible service.

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See the newest developments in Mechanical Power Transmission at our Booth No. 80—22nd National Power Show, New Coliseum, New York City, November 26-30.

News for the South & Southwest (Continued)

Transformers From General Electric's N. C. Plant

William S. Ginn, General Manager of General Electric Company's Transformer Division, Pittsfield, Mass. (left), presents the first distribution transformer to be produced at General Electric's $20 million Hickory, N. C., plant to **N. A. Cocke,** President of the Duke Power Company (center). **A. C. Boisseau,** Plant Manager (right), looks on. The 10 kva transformer, smallest of the various sizes to be manufactured in the new plant, bears a silver plaque identifying it as the first off the production lines.

Production came just one year after the first concrete was poured for the 400,000 sq ft plant. Although all equipment will not be in place before 1956, production has started on a limited scale and will be stepped up gradually.

The Hickory plant is one of five General Electric plants now in operation in the Carolinas. Production began recently in the Company's new outdoor lighting plant in Hendersonville, N. C., and in the electrolytic capacitor plant in Irmo, S. C. The Company has operated an automatic blanket plant at Asheboro, N. C., and a lamp lead wire plant in Goldsboro, N. C., for several years.

Dresser Acquires Guiberson

Dresser Industries, Inc., one of the country's largest suppliers of equipment and technical services for the oil, gas and chemical industries, has completed negotiations for the acquisition of the assets of the **Guiberson Corporation** of Dallas, Texas.

Guiberson is a leading manufacturer of specialized oil well production and drilling equipment such as tubing and casing swabs, molded rubber products, well servicing equipment, drilling heads, gas lift valves and related products. The company has 450 employees and its products are widely used in every important oil producing area of the world.

Stone & Webster—Houston

Stone & Webster Service Corporation, New York, has announced the opening of an office in **Houston, Texas.**

President Richard N. Benjamin said the new office would provide closer contact with clients in the southwest and reflects the increasing demand for the corporation's services.

Mr. Benjamin said the Houston office would be under the direction of **Paul R. Taylor,** president of Industrial Gas Supply Corporation, Houston, who is also a vice president of Stone & Webster Service Corporation. Both organizations are subsidiaries of Stone & Webster, Incorporated, New York.

Turbine Specialist for G-E's Southwestern District

William E. Schroeder has been named a Turbine Specialist for General Electric Company's Southwestern district with the home office in **Dallas, Texas.**

The Southwestern district includes the entire states of Texas and Oklahoma, and parts of New Mexico, Arkansas and Louisiana.

Schroeder graduated from Rensselaer Polytechnic Institute in 1951 with a bachelor of science degree in management engineering. He joined the General Electric Company that same year on the engineering test program. He then held a position as a proposition engineer in four of the departments of the Turbine Division.

J. F. Pritchard—Mo.

The Sears-Westall Company, of St. Louis, Missouri, has been named sales representative for eastern Missouri, southern Illinois, southern Indiana and the western tip of Kentucky by **J. F. Pritchard and Company of California,** Kansas City, Missouri, manufacturer of cooling towers for air conditioning and industrial applications and Pritchard Hydryers, packaged dehydration units for drying air or other gases.

This organization, with **John Sears** and **George Westall** as principals, is the successor to the MacGregor-Sears Company which was founded over ten years ago. The company, as manufacturer's representative, serves the process equipment needs of the refining, chemical processing and power industries.

Nalco — Southeast

National Aluminate Corporation (Nalco) expanded its technical service operation in the Southeast recently with the addition of two new men — **Arthur F. Kopisch** and **Louis Lewis.**

Kopisch, a Chemical Engineering graduate of the University of Wisconsin, will work out of **Richmond, Virginia.**

A Mechanical Engineer from Stevens Institute, and a former boiler designer for Babock & Wilcox, Lewis will headquarter in **Columbia, South Carolina.**

Fairbanks 5 Cost-Cutters For Your Light, Bulky Materials Handling Jobs

rugged construction and smoother operation take the load off your mind . . .

9215-S General Purpose Truck — more widely regarded as a **necessary tool** in shipping rooms, stores, warehouses, passenger baggage terminals and with transfer and express companies — for use on delivery trucks—where it is unsurpassed for handling small lot merchandise including round objects. Steel framed construction.

A-1448 Utility Truck — very popular in stores, offices, institutions, shipping rooms and factories for carrying small lot merchandise and widely used in bottling and beverage plants and on beverage delivery trucks for moving case lots. All steel welded construction, fitted with stair climber.

Lift Jack Platform Trucks — perfect answers for minimum cost temporary storage of raw material, parts, semi-finished goods or finished pieces. Jack handle has no moving parts — engages and disengages semi-live skid simply and quickly. One jack handle sufficient for a number of platforms.

"Bantamweight" Platform Trucks — outstanding values for lightweight materials handling from low initial cost through minimum operating expense. Readily adaptable to continuous conveyor systems. Light and strong construction, very mobile on Fairbanks "Lockweld" Double Ball Race Swivel Casters and matching rigid casters.

T-1114 Dollies — providing greatest maneuverability for bulky merchandise on Fairbanks "Lockweld" Steel **Double Ball Race** Swivel Casters. Very popular trucks with furniture movers, storage warehousemen and truckers.

YOURS ON REQUEST: Fairbanks Truck Catalog, complete with illustrations and specifications describing Fairbanks Trucks.

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A TYPE FOR EVERY USE!
FOR ALL PRESSURES!
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With screwed or socket weld ends. 3000-lb. and 6000-lb. service.

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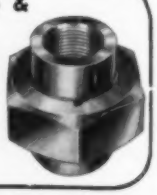
With steel-to-steel, bronze-to-steel, stainless steel-to-steel or orifice seats. 3000-lb. service only.

FULL STAINLESS & FULL ALLOY STEEL UNIONS
With screwed or socket weld ends. 3000-lb. and 8000-lb. service.



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News for the South & Southwest (Continued)

A. M. Lockett—Houston

A. M. Lockett & Company, Ltd. (New Orleans—Houston—Dallas) has announced the following promotions in their **Houston District Territory.**

J. E. Montgomery has been appointed Assistant to the Vice President in the Houston Area, with headquarters in Houston, Texas.

J. E. Montgomery

Mr. Montgomery is a graduate of Rice Institute, Houston, having received a B.S. in Mechanical Engineering in June, 1924. He then became associated with the Houston Office of A. M. Lockett & Company, and in October, 1948, was appointed District Manager of the Houston District Office.

R. C. Elder has been appointed Manager of the Houston District Office, succeeding Mr. Montgomery.

Mr. Elder is a graduate of the Georgia Institute of Technology, having received a B.S. Degree in Mechanical Engineering in 1943. At that time, Mr. Elder became connected with the New Orleans Office of A. M. Lockett & Company; and, later, on leave of absence, he attended the Wharton School of Finance and Commerce, of the University of Pennsylvania, from which he received an M.B.A. Degree, in 1950. At the time, he returned to the employ of A. M. Lockett & Company, and was assigned to their Houston District Office

R. C. Elder

Hyster — D. C. Area

Richard M. Ervin has been promoted to Manager of **Hyster Company's** Washington, D. C. Office, 1111 17th Street, N. W., and District Manager of Hyster's East Central Industrial Truck Division. Ervin moves to the position held by Robert E. Lange, who will become Resident Manager of the Hyster wholly-owned subsidiary plant to open in Sao Paulo, Brazil.

As Manager of the Washington, D. C. Office Ervin will represent both Hyster's Industrial Truck and Tractor Equipment Divisions. As District Manager in the area, he will assist Hyster industrial truck dealers McCall-Boykin Co., Inc., Baltimore, Maryland, and Richmond Auto Parts, Inc., Richmond, Virginia, and Roanoke, Virginia.

Hapman-Dutton Officers

Henry W. Hapman is now chairman of the board of **Hapman-Dutton Company,** Kalamazoo, Michigan. Appointed as president and general manager is **William H. Phillips,** formerly vice president-general manager.

Mr. Hapman has pioneered numerous conveyor engineering advancements and was the founder of Hapman Conveyors in 1944. Later combined with Dutton Boilers Company, the firm manufactures both packaged steam generators and bulk materials conveyors.

In 1953, Mr. Phillips was appointed Hapman-Dutton vice president. Prior to that time, he was assistant to the president of Hein Werner Corporation, in charge of manufacturing and sales development.

American Air Filter Southern Regional Mgr.

Morris G. Munson, St. Petersburg, Fla., has been appointed Southern Regional Manager, **American Air Filter Co.**

In announcing the appointment, John Hellstrom, Vice President and Director of Sales for AAF, said Munson will be responsible for the field sales organization of AAF in the states of Florida, Georgia, Alabama, Mississippi, Louisiana, Texas, Arkansas and Oklahoma.

American Air Filter is one of the nation's leading manufacturers of air filtration, dust control, heating and ventilating equipment.

Munson has been associated with American Air Filter Co., directly and indirectly since 1911. At that time he went to work for the Moline Heat Corporation, which was a predecessor of the Herman Nelson Corporation. Herman Nelson is now a division of AAF.

From 1920 to 1925 he was a field representative. He then joined the home office organization in sales management. Since 1952 he has been Southern Regional Manager for Unit Ventilator and Heating and Ventilating Product Department.

He will continue to be located at AAF's Southern Regional Office, 11730 Gulf Boulevard, St. Petersburg, Fla.

J. M. Osborne, also located at St. Petersburg, Fla., has been named Southern Regional supervisor of Unit Ventilator and Heating and Ventilating products.

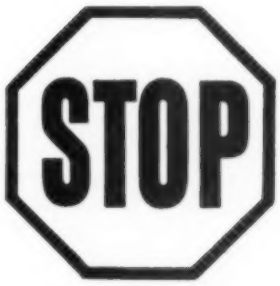
McGrane is Chf. Tech. Engr. of Western Precipitation

Western Precipitation Corporation has announced that **Norman M. McGrane,** a veteran of thirty-one years with the organization, has been promoted to the post of Chief Technical Engineer, and also has been elected to the Corporation's Board of Directors.

Worthington—S. C.

E. W. Stegman, Jr., of Worthington Corporation's South Carolina Branch Office, has announced that **R. E. Perryman,** AC&R Specialist, recently joined their staff.

The Worthington Corporation branch office was recently moved to 501 East North Street, **Greenville, S. C.**



LOOK, SEE, COMPARE at the

22nd NATIONAL EXPOSITION of POWER & MECHANICAL ENGINEERING

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Power Generation Equipment · Package Boilers · Combustion Equipment · Car Shake-outs · Pumps · Compressors · Power Piping · Valves & Fittings · Boiler & Condenser Tubes · Heat Exchangers · Refractories · Water Treatment Equipment · Insulation · Oil Purifiers · Steam Specialties · Heat Transfer Equipment · Fans & Blowers · Dust Collectors · Instruments & Controls · Heating Equipment · Material Handling Equipment · Electric Motors & Controls · Metals · Packing & Gaskets · Speed Reducers · Bearings, Belting, Lubrication, Gears · Tools · Hydraulic Equipment and the fast growing list of Atomic Products

SEE and learn how new ideas, techniques and equipment open new power horizons—including progress in the industrial applications of atomic energy.

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22nd NATIONAL EXPOSITION of POWER & MECHANICAL ENGINEERING

480 Lexington Ave., New York 17, N. Y.

Management: INTERNATIONAL EXPOSITION COMPANY

News for the South & Southwest (Continued)

John J. Greagan (left), special representative in the Birmingham district of **Allis-Chalmers** Industries Group, receives a service award and congratulations from **D. S. Kerr,** manager of the Company's Southeast Region, in recognition of 50 years of service with the company. Greagan, who retired in July, started with Allis-Chalmers in June, 1906. He was a sales representative for the firm in Atlanta and New Orleans before being named manager at Birmingham in 1920. He held that post until 1950, when he became special representative.

Nickles Machine—Oklahoma

H. A. "Bob" Morris has been promoted to the position of sales manager of **Nickles Machine Corporation,** Ponca City, Oklahoma. Morris, who joined Nimco in 1954, has had many years experience in the industrial engine maintenance field. He will make his home in Ponca City.

Morris is succeeded as Permian Basin representative and sales engineer for Nimco by **Jack M. Ray,** who joined the company as salesman last year. Ray will make his headquarters in Odessa, Texas.

A. M. Byers — Fla.

Hughes Supply, Inc., 521 W. Central Ave., Orlando, Florida, is now a wholesale distributor for **A. M. Byers Company's** wrought iron pipe. The Hughes organization, with branches in Daytona Beach, Gainesville, St. Petersburg and Sarasota, is marketing the wrought iron pipe under the supervision of the Byers division office in Atlanta, Ga.

Florida Atomic Plant

Executives of three Florida electric utility companies visited Allis-Chalmers Manufacturing Co. recently to discuss plans for an atomic reactor power plant the utility companies plan to build jointly in the State of Florida.

W. J. Clapp, president, Florida Power Corp., St. Petersburg; **George Kinsman,** vice president, Florida Power & Light Co., Miami; and **W. C. MacInnes,** president, Tampa Electric Co., Tampa, met with Allis-Chalmers officials and engineers for further discussions concerning the proposed major power plant using atomic energy for fuel.

Allis-Chalmers will design and manufacture major equipment for the plant, which according to the Florida utility officials, might have a 200,000 kw capacity.

The three companies are the largest electric utility companies in Florida. They formed the Florida Nuclear Power Group to build the atomic power plant at a location within suitable transmission distance of Miami, St. Petersburg and Tampa.

Looking at components of a main circulating pump while on a tour of Allis-Chalmers West Allis Works are (from left) GEORGE KINSMAN, vice president, Florida Power & Light Co., Miami; C. R. CLAXTON, Stone & Webster Engineering Corp., and W. J. CLAPP, president, Florida Power Corp., St. Petersburg.

EXTRA YEARS

OF MORE DEPENDABLE POWER
and at less cost per pound of steam

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GAS OR OIL

PRODUCTS DIVISION
TODD SHIPYARDS CORPORATION
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Rittelmeyer and Company Represents Kieley and Mueller

Rittelmeyer and Company, Inc., of Atlanta, Georgia, has been appointed representative for **Kieley and Mueller, Inc.** in **Georgia, Florida,** and **Eastern Tennessee.**

Kieley and Mueller, prominent manufacturer of pressure and level control valves since 1879, has its headquarters and factory at Middletown, N. Y.

John M. Rittelmeyer started in business as a manufacturer's rep-

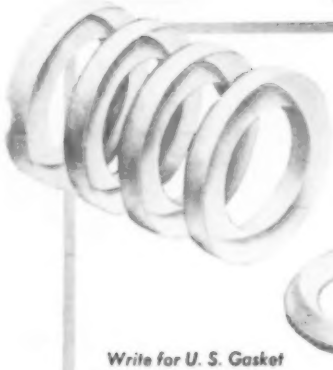
resentative in Atlanta in 1925. Previously he worked as a turbine designer and erector and later engaged in sales work for Westinghouse. Rittelmeyer and Company, from its very beginning, has handled top quality accounts, and the careful policy of representing organizations of the highest reputation has inspired customer satisfaction and resulted in company growth through the years.

Today the organization is composed of: **John M. Rittelmeyer,** president; **Donald M. McRae,** sales manager; **Michael A. Dailey,** chief engineer; **John L. Bridges,** sales engineer; **John M. Rittelmeyer, Jr.,** student engineer; **William B. Lawson,** order department; and **Mrs. Marion A. Hays,** secretary. The Rittelmeyer organization occupies a modern, two-story, brick structure, completely air-conditioned and radiant-heated, in the business heart of Atlanta at 150 Nassau St., N. W.

Byron Jackson — Houston

N. D. Jesse, vice-president of **Byron Jackson Pumps, Inc.,** has announced the transfer of **Randy Oram,** sales engineer, from New York to the **Houston** region as District Manager, Dallas.

V-PACKING
for every process need



TEFLON . . .
CHEMISEAL PACKING

Chemiseal V-Rings are all TEFLON,* all low-friction, all-chemical resistant. Distinctive tapered V design offers greater flexibility and resiliency. Provides necessary seal at low gland pressure, reducing torque required to operate valves—imposes less load on reciprocating pump pistons. Outlasts other packings in chemical service, many times over.

Write for U. S. Gasket Catalog TP-1255 on Engineered Teflon Packings.

*du Pont Trademark

BEL-VEE
GENERAL PURPOSE PACKING

The "Pressure-Sealing" V-Ring packing that expands toward rod and stuffing box wall on pressure stroke to automatically form the seal—and relaxes when pressure is released to allow free movement with minimum friction.

For all reciprocating rods and valve stems handling water, oil, solvents, steam, air and gas.

Write for Belmont Catalog 4-R-10 on Self-Sealing V-Ring Packings.

United States Gasket Co.
Camden 1, New Jersey

The Belmont Packing & Rubber Co.
Butler & Sepviva Sts., Phila. 37, Pa.

U.S. GASKET • BELMONT PACKING

Equipment . . . Supplies . . . Methods

Cutting & Beveling Machine for Small Diameter Pipe

K-1 A completely portable flame cutting and pipe beveling machine for small-diameter pipe (1½" to 4") is being manufactured by **H & M Pipe Beveling Machine Company**, 311 E. 3rd St., Tulsa, Oklahoma. Wide application is predicted in industries where the fabrication and use of small-diameter piping is an important factor.

Heretofore, according to the manufacturer, hand cutting and beveling of pipe of less than 4" diameter has resulted in reduced operations and imperfect cuts and bevels, or had to be done by a pipe machine in a shop. The new H & M Model "O" is completely portable (weight: 7½ lb), and assures perfect, square bevels under all conditions. The machine can be operated easily and efficiently by unskilled operators.

Employing the same split-gear

horseshoe principle which characterizes the company's larger units (for pipe up to 36"), the new, smaller model allows its operator to place the machine on continuous pieces of pipe. A quick-operating, specially designed boomer strap speeds up the process of changing the machine from one piece of pipe to another.

Soldering Job Kit

K-3 After analyzing thousands of customer soldering problems in their research laboratory, **Alpha Metals, Inc.**, 56 Water St., Jersey City, N. J., manufacturer of soldering products, has developed and is now offering their newly revised general purpose flux kit, which contains 16 of the most recently advanced fluxes for electronic assemblies, printed circuits, tinning and hot solder dipping, stainless steel soldering and aluminum soldering.

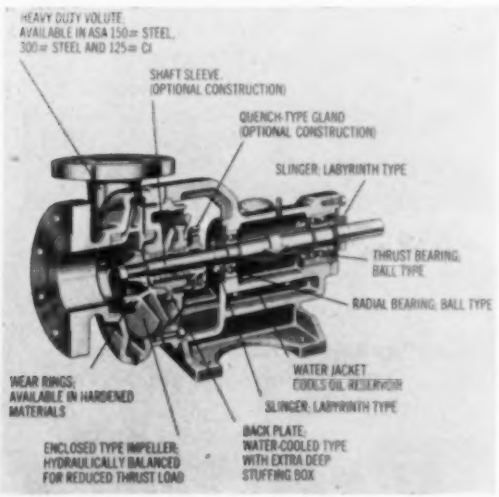
The kit will now enable engineers, designers and production men to quickly determine the proper flux for specific soldering jobs. The cost of the kit is $7.50.

Process Pumps Feature Parts Interchangeability

K-2 For pumping most all chemical process liquids, either hot or cold, in moderate capacities against low, medium or high heads, with special emphasis on a complete interchangeability of pump components, **Peerless Pump Division**, Food Machinery and Chemical Corporation, 301 West Avenue 26, Los Angeles 31, Calif., has recently introduced new chemical process pumps designated as Type DL and Type DM.

Pumps are available in discharge sizes from 1" through 4", providing a range for most all chemical process applications. Enclosed or open impeller design is optional construction. Capacities up to 800 gpm are provided. Types DL and DM pumps will operate against heads to 400 ft. Driver can be a standard, horizontal, electric motor mounted on common base with pump.

The new pumps are offered in two basic designs: one is grease-lubricated designated as Type DL — the other is oil — lubricated designated as Type DM. Either grease or oil lubrication is available with en-


HEAVY DUTY VOLUTE, AVAILABLE IN ASA 150# STEEL, 300# STEEL AND 125# CI
SHAFT SLEEVE, (OPTIONAL CONSTRUCTION)
QUENCH-TYPE GLAND (OPTIONAL CONSTRUCTION)
SLINGER, LABYRINTH TYPE
THRUST BEARING, BALL TYPE
RADIAL BEARING, BALL TYPE
WEAR RINGS, AVAILABLE IN HARDENED MATERIALS
WATER JACKET COOLS OIL RESERVOIR
SLINGER, LABYRINTH TYPE
BACK PLATE, WATER-COOLED TYPE WITH EXTRA DEEP STUFFING BOX
ENCLOSED TYPE IMPELLER, HYDRAULICALLY BALANCED FOR REDUCED THRUST LOAD

Cutaway view of the Type DM oil lubricated pump. Important feature of the new pump line is the economy achieved for the user through interchangeability of components. To either the Type DL or the Type DM frame, the user simply adds the desired back plate (air or water cooled) the desired impeller (open, with repelling vanes or enclosed with balance chamber) and the proper volute case to build the "proper" pump for the intended service. By such interchangeability of components process pump users can cut inventory on replacement parts up to 85%, secure greater pump versatility in application, and have the most efficient pump for every liquid condition.

FOR FREE INFORMATION

Circle Code Number on Page 17 Return Card

closed or open impellers. Standard bearing construction for operation at temperatures to 250°F is grease lubricated. Above 250°F to 400°F oil lubricated construction is utilized. However, the latter construction is also available for pumps handling liquids to 250°F. In and out cooling connections in the oil lubricated design maintain oil supply in reservoir at proper temperature. Provision is also made for water cooling the packing. The pump case is tapped for in-and-out water cooling connections for temperatures up to 400 F. Where a positive seal is desired, the Type DL and the Type DM pumps can be equipped with mechanical shaft seal of standard design and manufacture.

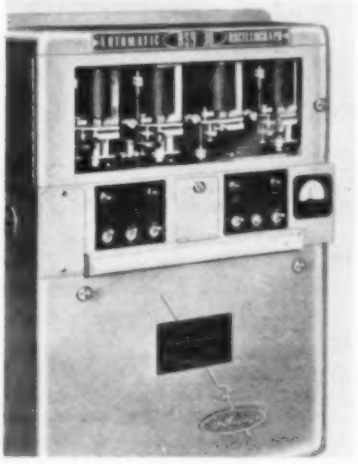
Peerless Type DL and Type DM chemical process pumps are completely described and illustrated in Bulletin No. B-1608.

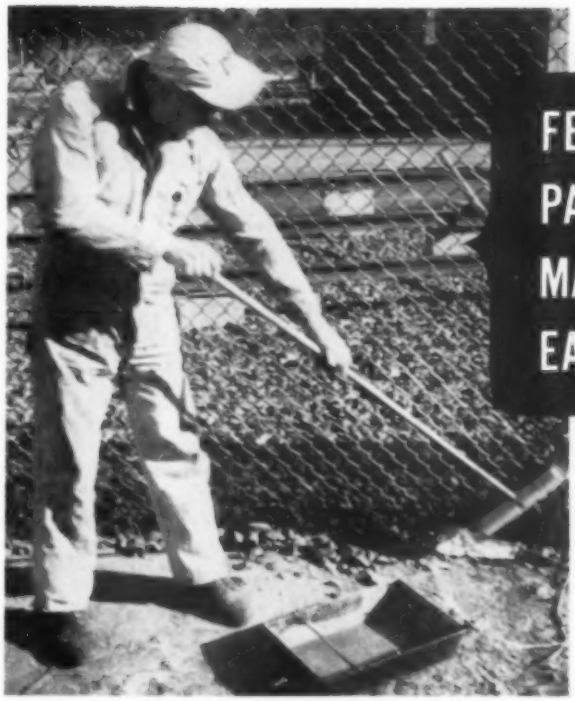
Automatic Oscillograph

K-4 The new RS9-Thirty Automatic Oscillograph produced by **Hathaway Instrument Co.**, 1315 South Clarkson Street, Denver 10, Colorado, is claimed to give more channels, faster starting, more types of starting relays, sharper traces and lower expansion costs.

Applications include power generating station and distribution system monitoring.

Design features include 2-Millisecond Automatic Starting, four internal starting relays, two chart speeds, cartridge loading, choice of galvanometers, simplified optical system, digital date and time, two calibrating screens, convenience and accessibility.





FENCE PAINTING MADE EASY

Subox makes fence painting easy and economical.

Subox paints are so simple and quick to apply that you can put them on by spray or roller coating methods — but for the fastest and most satisfactory results use an ordinary floor broom!

Subox paints are the only paints in America made with *suboxide of lead* — one of the most effective rust-inhibitive and anti-corrosive agents known. In addition, being a heavy colloidal pigment, it prevents spattering when applied to wire mesh. Subox goes on smoothly, evenly, thoroughly and adheres closely.

Next time use Subox. It costs no more than other paints and endures for many years. Comes in a wide variety of decorative colors.

Detailed instructions for easy, economical fence painting are contained in the booklet, *"Simplified Fence Painting"*. Send for a copy.

Subox Inc.

Established 1924

6 Fairmount Plant, Hackensack, N. J.

See Catalogues in Sweet's Industrial and Engineering Files.

Equipment, Supplies & Methods (Cont'd)

Electric Power Hammer

K-5 A new lightweight, powerful electric hammer for maintenance and construction work has been announced by **Ingersoll-Rand**, 11 Broadway, N. Y. 4, New York.

Applications include: piercing, breaking, channelling, battering, chipping, caulking, digging, scaling, riveting, gouging, routing, hammering, roughing, chiseling, cleaning, seaming, shaping, cutting, forming, peening, tuck-pointing, scuffing, descaling, and vibrating.

Weighing only 12 lbs, 13 oz, the tool is said to be easier to handle, yet provides more power per pound than any other electric hammer. It will drill holes in concrete up to 1⅛" in diameter. The tool delivers up to 1900 blows per minute. Operations may be performed on a variety of materials including concrete,

macadam, stone, cinder blocks, wood, metal, tile, and earth.

Known as the "H54U Electric Power Hammer," the tool has several distinct advantages which make it efficient, easy-to-use, and low in maintenance costs. Solid, hard-hitting blows are assured by an exclusive "spring-floated" piston, with the sealed spring accelerating the piston to produce a more powerful blow. This design prevents leakage and loss of power which sometimes occurs with an air-cushioned piston.

The tool is available in a standard kit, with a choice of three packaged accessory kits, or individual accessory items may be purchased as desired. Eight page Catalog — Form 5199 — gives operating and design features.

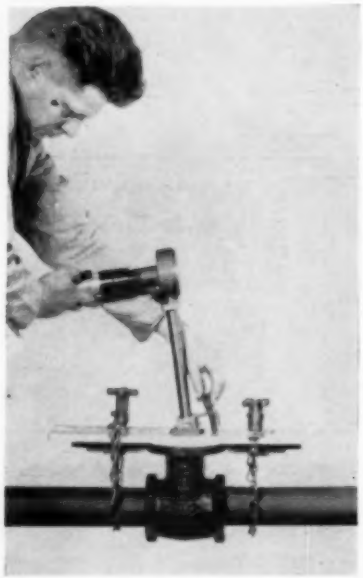
Valve Reseating Grinder for On-The-Line Jobs

K-6 Marked savings in labor, increased production, fuel savings and power gains are some of the benefits resulting from the use of the new motor-driven Dexter Valve Reseating Grinder, manufactured by the **Leavitt Machine Co.**, 10 East River St., Orange, Mass.

One man using the versatile new machine can regrind any globe or gate valve from ¼" to 12" without removing the valve from the line.

Through the use of a new high speed motor and recently developed abrasive cloth grinding elements, the new machine can grind the seat of any valve regardless of material hardness. The grinding elements, made in the form of cones and segments, are mounted on various size rubber coated grinding heads. By changing these grinding heads, the same machine can be used on various size valves.

Since one man using the new machine can grind any valve right in the line, the need for 3 or 4 man crews to remove and replace defective valves is eliminated. The machine guarantees accuracy by re-



DURAMETALLIC Packings
You will get definite savings in maintenance costs when you use DURAMETALLIC spiral or die-molded ring packings. Durametallic means long uninterrupted sealing service with less wear on rods, shafts, sleeves or stems.
Write today for File No. DMSP
Durametallic Products are "Engineered For The Job"
The PERFECT SEAL
DURAMETALLIC CORPORATION
KALAMAZOO MICHIGAN

facing irregular valve seats from the same "reference point" that was used by the manufacturer in machining the original seat. Strict adherence to the original "reference point" makes the reground valve as tight as new.

The valve reseating grinder is available in kit form in three basic models for globe and gate valves.

For More Free Data CIRCLE CODE NO. on the Handy Return Card — Page 17

Deep-Cut Hole Saw Kit

K-7 Designed to save time and money in industrial plant maintenance, remodeling, or new installations, **Millers Falls Company,** Greenfield, Mass., is marketing the No. 1741 Deep-Cut Hole Saw Kit. Kit is designed to speed up countless pipefitting, sheet metal, plumbing, electrical and general maintenance jobs.

Six saws, ranging from 1 1/16" to 2 9/16" diam., are packed complete with two mandrels (both have 7/16" hex shanks and ⅜" pilot drills. Depth of cut is 2½"; core removal permits deeper cuts as the saw follows through its own hole. Saws will bite fast through most any building material, metal pipes and tanks, ordinary nails, screws, metal lath, and other obstructions in floors, walls, partitions, etc.

Condensate Return Systems

K-8 A new series of condensate return pumping units for both closed low pressure steam heating systems or process equipment, and for boiler feed condensate return has been introduced by **Goulds Pumps, Inc.,** 14 Black Brook Rd., Seneca Falls, New York. Single and duplex units may be obtained for straight condensate return and also for boiler feed condensate return systems.

The **straight condensate return units** receive, and automatically return to the boiler, the condensate from various types of low pressure steam heating systems and process equipment. Used in closed systems with no appreciable loss of steam, the unit returns water before it loses valuable heat. Prevention of heat loss can be translated into terms of worthwhile fuel savings. The unit consists of a receiver tank to which is connected a close-coupled centrifugal pump.

The **boiler feed condensate return system** automatically blends raw make-up water with hot return condensate which is injected into boiler to maintain water line at an even rate. Admittance of fresh water is controlled by make-up valve on the receiver and connected to city water supply or other source. This valve introduces make-up water to receiver at intervals as determined by boiler load demand. When

ARMCO RETAINING WALLS

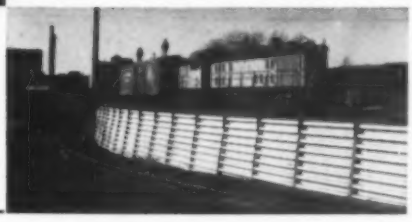
- **Stabilize Slopes**
- **Gain Valuable Land**

Armco Bin-Type Retaining Walls provide an efficient and economical solution to earth control problems. They stabilize steep slopes and gain land for buildings, railroad sidings, roads or parking areas.

Bin-type all-metal cellular construction provides flexible strength. Earth fill gives the necessary weight and stability. All-bolted assembly means small crews can do the work—without special equipment.

This Armco Retaining Wall was installed by a famous Milwaukee brewer to stabilize a slope and make room for an additional railroad siding.

On a sloping lot of the Emmerson Truck & Storage Company, Inc., Battlecreek, Michigan, an Armco Wall provides a level area for parking trucks and equipment.



One set of tracks at the Wausau Paper Mills, Brokaw, Wisconsin, had to enter the plant 16 feet higher than the lower siding. An Armco Bin Wall solved the problem.

Armco Walls are supplied in a wide range of sizes. Write for data.

ARMCO DRAINAGE & METAL PRODUCTS, INC.

DIXIE DIVISION
619 Forsyth Bldg. • Atlanta, Georgia

SOUTHWESTERN DIVISION
C & I Life Bldg. • Houston, Texas

Other Offices in Principal Cities

Equipment, Supplies & Methods (Cont'd)

water is let into boiler to compensate for loss of live steam or non-recoverable condensate, heat is absorbed evenly with resultant minimum degree of fluctuation in fire. Evenly controlled, boiler feeding of condensate at high temperature promotes regular steam production, reduces scale formation and improves system efficiency with proportionate fuel savings. These units consist mainly of a receiver tank with a close-coupled centrifugal pump attached.

Duplex units have two pumps which, in straight condensate return systems, alternate in operation. On boiler feed condensate return systems operation of pumps is governed by boiler level control attached to the boiler. It is a two level control, starting and stopping both pumps in sequence. In straight condensate return, alternate operation equalizes wear, prevents rust and corrosion in one pump standing idle over long periods, reduces maintenance and repair expense. If condensate return is greater than one pump can handle, the second pump starts automatically.

Receivers in both return systems vary in capacity with 7, 14, 40, 60 and 100 gallon units. No piping is required to attach 7 and 14 gallon receivers and pumps.

High-Head Differential Flow Transmitters

K-9 High pressure — high velocity flows may now be measured and transmitted pneumatically on a linear flow basis with a new line of high-head differential pressure transmitters, announced by **Bailey Meter Company**, 1050 Ivanhoe Rd., Cleveland 10, Ohio.

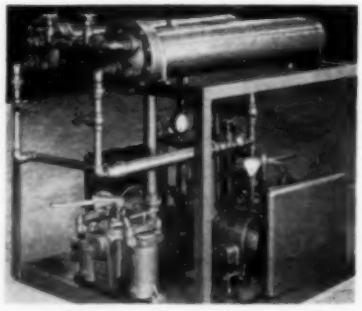
Units, utilizing the accuracy of mercury U - tube measurements, automatically convert a differential pressure to rate of flow—for improved metering and control practices. Features are low cost, accuracy, rangeability, simplicity, and flexibility.

These transmitters measure the rate of flow of steam, water, other liquids, and gases producing maximum differentials from 100 to 1200 in. H_2O. The mercury U-tube is available for maximum service pressures of 800, 3500, and 6000 psig. Where mercury is undesirable, a bellows type is available for maximum service pressures of 1500 and 3500 psig.

Heater-Pump Sets for Heavy Fuel Oils

K-10 Packaged combinations for preheating, straining and pumping heavy No. 5, No. 6 and Bunker C fuel oils are available from **York-Shipley, Inc.**, York, Penn., in duplex (illustrated) or single assemblies. Each is a completely self-contained unit, ready for immediate operation as soon as connections are made to the fuel line and electrical service.

Manufactured for use with all



install J.H.H. VOSS VALVES in your compressors for peak performance

(AIR • GAS • AMMONIA)

Our detailed proposal for improving efficiency of your compressor will be sent without obligation. Send name, bore, stroke, and speed of machine.

Peak performance, maximum efficiency, greater output, and lower power costs can be built into your oldest, and of course your newest, compressors by the installation of VOSS VALVES.

Check THESE VOSS VALVE ADVANTAGES:

✓ Quiet, vibration-free operation ✓ 20 to 60% more valve area
✓ less power consumption ✓ minimum pressure loss ✓ utmost safety
✓ normal discharge temperature ✓ lower operating costs

J. H. H. VOSS VALVES REG. U.S. PAT. OFF.

J. H. H. VOSS CO., INC.
785 East 144th St., N. Y. 54, N. Y.

That's right sir, Southern Water Conditioning is the largest in the South . . . Serving just the South to assure better and faster service. Top personnel with more than 32 years experience in the field.

WHAT SOWACO OFFERS YOU!

★ **Zeolite Water Softeners**
Standard greensand, hi capacity greensand, synthetic gel, sulfonated coal, resin polystyrene, sodium and hydrogen ion exchangers, hot process

★ **Filters and Purifiers**
Sand — anthrafilt — quartz — activated carbon — taste and odor removal — condensate oil removal

★ **Modernized and Rebuilt Water Softeners**
Increased capacities of older units as much as 300% (depending on type of zeolite) standard valve nests — multiport valves — semi automatic and fully automatic

★ **Aerators and Degasitors**
Coke tray — slat tray — forced draft — induced draft for removal of iron — manganese — taste and odor — hydrogen sulphide — methane

★ **Process and Boiler Water Conditioning**
De-mineralizers — post treatments — zeolite — alkalinity neutralizers — split stream system — chemical treatment feeders. Misc. chemical treatments. Your inquiry survey made by competent personnel. Service after installation, periodic calls

★ **Domestic Softeners—all types**
Swimming pool filters, complete package units, Zeolite in stock, for immediate shipment

FREE: *Write today for illustrated literature and detailed information*

Southern Water Conditioning, Inc.
St. Petersburg, Fla.

Southern Water Conditioning, Inc.,
315 15th Avenue So., St. Petersburg, Fla.

Suh!

☐ As one Southern gentleman to another Southern gentleman, I would like to receive your illustrated brochures.

☐ I would like detailed information on .....

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For More Free Data CIRCLE CODE NO. on the Handy Return Card — Page 17

burners designed to burn heavy oil, these "York-Power" pump and preheater assemblies come in four standard sizes:

Model 100, pump size 2C, 100 gph; motor ½ hp; Model 225, pump size 3C, 225 gph; motor ¾ hp; Model 400, pump size 4C, 400 gph; motor 1 hp; and Model 700, pump size 5C, 700 gph; motor 1½ hp.

Equipment for single assemblies includes oil preheater, duplex oil strainer, fuel pump, motor, push-button magnetic starter, pressure gauge reading from 0 to 160 psi, ¾-in. relief valve, sheaves and belts, fan-type temperature gauge, check valve and gate vaive. These components are assembled and mounted on a steel base plate and frame. Aquastat and circulator for hot water or steam solenoid for steam are also furnished, but not mounted.

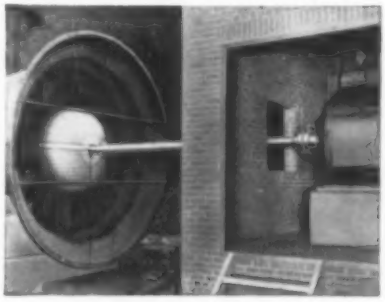
For duplex assemblies, two sets of most of the components listed above are provided.

Liquid Level Gage Flashes Red Warning

K-11 Truscale remote reading liquid level gages, manufactured by **Jerguson Gage & Valve Co.**, 80 Fellsway, Somerville 45, Mass., are now available with a unique new safety feature, in which the face of the scale lights up and flashes red continuously to warn when the liquid level is too high or too low.

The new Red Flasher Truscale gives a positive visual warning

Eliminate Intermediate Bearings!



By using Thomas Flexible Couplings on long, unsupported shafts, intermediate bearings are eliminated. Thomas engineers tubular shafts free from lateral whip.

The large fan shown above is 16' from the motor to allow sufficient air intake. Miners working underground receive their fresh air supply from this fan and others like it, which have been giving dependable service for as long as fifteen years . . . without shutdowns for lubrication or maintenance of the couplings.

Thomas floating shaft flexible couplings are recommended for machine and marine drives, printing presses, paper and cement mills, cooling towers, diesel engines, pumps, compressors, and many other uses.

Only Thomas Flexible Couplings offer *all* these advantages

UNDER LOAD and MISALIGNMENT

1. Freedom from Backlash—Torsional Rigidity
2. Free End Float
3. Smooth Continuous Drive with Constant Rotational Velocity
4. Visual Inspection in Operation
5. Original Balance for Life . . . *and*

Thomas All Metal Couplings have No Wearing Parts so Lubrication and Maintenance are Eliminated

Write for Engineering Catalog 51A

THOMAS FLEXIBLE COUPLING CO.

WARREN, PENNSYLVANIA, U.S.A.

CHROMALOX
Electric
TUBULAR HEATERS

provide controlled and dependable conduction, convection or radiant heat

These versatile Chromalox Tubular Heaters provide the kind of heat you need, exactly fitted to your specific heating application.

Available in straight lengths or formed to any desired shape. Used for heating dies, molds, platens; as immersion heaters in liquids, soft metal and molten salts; or in ovens, air ducts and other air heating applications.

Let the Chromalox Sales Engineering staff solve your heating problems . . . electrically

Write for your copy of Catalog 50

—for full information on the complete line of Chromalox Electric Heaters and controls.

For ideas on additional applications of electric heat, request Booklet F1550—"101 Ways to Apply Electric Heat."

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☐ a copy of "101 Ways"
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A-4460A

SALES ENGINEERING REPRESENTATIVES—*Atlanta 9, Ga.*—C. B. Rogers and Associates, 1000 Peachtree St., N.E.; *Charlotte 2, N. C.*—Ranson, Wallace & Co., 116½ East Fourth St.; *Dallas 26, Texas*—L. R. Ward Co., 3009-11 Canton St.; *Houston 3, Texas*—L. R. Ward Co., 1814 Texas Ave.; *Nashville 4, Tenn.*—H. R. Miles and Associates, 2500 Franklin Road.

Equipment, Supplies & Methods (Cont'd)

which immediately signals if there is trouble in the level of the boiler water. When the liquid level is safe, the scale is illuminated with two 15w bulbs, one at either end; when the alarm points are reached the whole scale is brightly lit in red by a large bulb in the center which flashes continuously until the dangerous condition is corrected.

Truscale Gages give instant remote reading of liquid levels of boilers, tanks, etc., with the accuracy of ½ of 1% of scale reading. They bring the liquid level to where it can easily be seen. They may be equipped with signal horns, lights and up to six repeaters, so they can speak up and signal the whole operating floor as well as officials at other remote points. Details are featured in Bulletin No. 291.

Adhesive Field Kit

K-12 A new development utilizing the outstanding bonding properties of Epoxy Resins is the Epoxy Adhesive Kit now being produced by **Houghton Laboratories, Inc.**, of Olean, New York.

This new kit is designed for use in the field and contains the exact

required proportion of resin and hardener in two flexible tubes. Complete instructions are inside the kit.

One tube contains the resin and when a bead of any length is squeezed on the mixing surface, the user then only needs to match that bead in length with the hardener bead. After thorough mixing, the adhesive is ready to use. This feature eliminates on-the-job weighing for exact proportions, precludes human errors and assures precise mixture for best results.

While Epoxy Resins make excellent bonds between such materials as metal-to-metal, metal-to-wood, wood-to-wood, glass, ceramics, other plastics, specific applications include: component bonding in production, assembly of metal units in the field, repair of electrical and other industrial products in the field, patching and repair of laminated plastics, and repair of epoxy castings.

For More Free Data CIRCLE CODE NO. on the Handy Return Card — Page 17

Hammerless Setting Tool

K-13 Many of the tougher jobs of installing small and medium size anchors in masonry are simplified with the use of the Arro Expander Hammerless Setting Tool, manufactured by the **Arro Expansion Bolt Company**, Marion, Ohio. Tool is designed to expand small and medium size anchors in holes that extend through the masonry or in holes with weak bottoms.

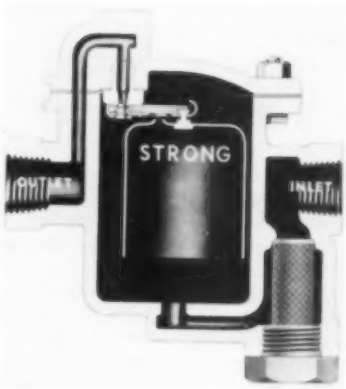
The tool is ideal for making attachments to concrete block, cinder block, tile, or other types of masonry which will not withstand the hammer blows on standard setting punches. It is also used extensively for lining-up any number of anchors at an even depth.

Use of the tool makes installations of anchors fast and easy and gives the work a neat, trim appearance. Simply screw the anchor onto the threaded stud, insert into the hole to the proper depth, then turn the "T" handle until the anchor is fully expanded. The tool comes in a range of sizes up to and including the ¼".

Steam Trap With Built-In Strainer

K-14 Production of the new 140-S Hydro-Flex Steam Trap has been announced by Strong Steam Specialties Division, **Strong, Carlisle & Hammond,** 1392 West Third St., Cleveland 13, Ohio. Distinctive feature of this trap is the built-in stainless strainer which prevents clogging and reduces cleaning maintenance time. Other features are: small size and weight, "Hydro-Flex" bucket action for efficient operation under all load conditions, durable semi-steel body and all stainless steel working parts.

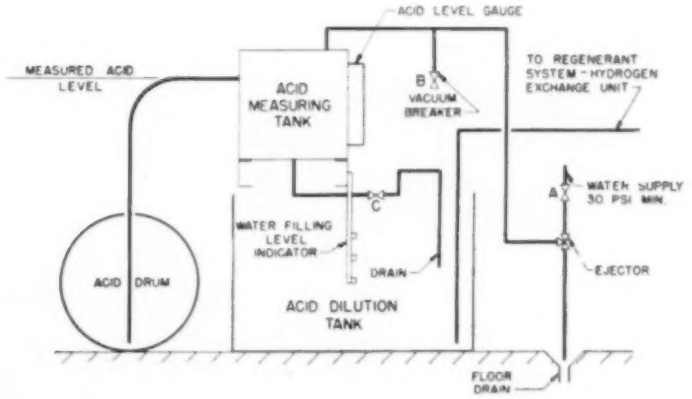
The strainer is located on the inlet side to catch foreign matter before it has a chance to clog the trap. The strainer screen is installed in a vertical position and may be easily and quickly removed for cleaning. By making the strainer



an integral part of the trap, space is saved over other installations where a separate strainer is required. This is important in smaller equipment where space is at a premium.

The traps are suitable for working pressures up to 150 psig. Inlet and outlet tapped hole sizes are ½" and ¾".

ACID HANDLING SYSTEM
(Vacuum Type)



Acid Handling System

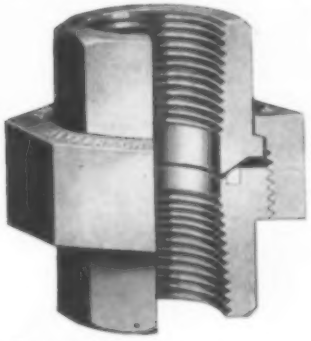
K-15 **Graver Water Conditioning Co.,** 216 West 14th Street, New York, N. Y. is offering a method of acid handling which is of importance to plants using acid in carboys and drums.

This equipment can be furnished as part of the regenerant system of water treatment processes such as demineralization, hydrogen zeolite ion exchange and acid stabilization. It provides a safe and simple method of handling any amount of acid that must be diluted with water.

Known as the Graver Vacuum Acid Handling System, it enables the transfer, measurement and dilution of acid to be accomplished without the necessity of lifting carboys or drums and without subjecting any vessels to positive pressures.

Only a water line need be added to the system as furnished. The acid is drawn from the drum or carboy to the measuring tank by the vacuum created by the water operated ejector. When the proper amount of acid is in the tank, the flow is stopped by merely opening a vacuum breaker. Excess acid draws back to supply source. After the dilution tank is filled with water, the measured acid is drained into the dilution tank. The proper amount and concentration of acid is then ready for use in the regeneration system.

For Maximum All-Time Satisfaction . . .



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A-4 PIPE UNIONS

JEFFERSON UNIONS are in a class by themselves in strength, reliability and all-round satisfactory performance in hard service. Made of air furnace malleable iron having a tensile strength of 55,000 P.S.I. tensile strength, they minimize both installation and maintenance costs, because:

. . . all seats are actually ground not just machine-finished . . . seat rings are cut from specially drawn brass tubing of our own specifications . . . seating surfaces are ground into a true arc, ground and assembled in pairs for absolute tightness and self-seating and never separated during manufacture . . . ball shape insures perfect contact of entire surface of joint . . . rigid testing and inspection assure protection to all users.

Then, too, Jefferson A-4 Pipe Unions are recommended for 500 lbs. P.S.I. steam and oil at 550° F., or 2000 lbs. P.S.I. non-shock cold W.O.G. in all sizes from ⅛" to 2" inclusive. They are approved by Underwriters' Laboratories.

No other line of malleable iron unions compares with Jefferson in strength, length of life or uniform high quality. **They can satisfactorily replace higher cost steel unions in the services listed.** Many large industrial companies specify Jefferson A-4 Unions in order to always secure dependable quality.

The complete Jefferson line includes 150#, 250# and 300# unions, union elbows, union tees and flange unions. Iron-to-iron seats are also available.

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Fig. 4
Inclined Water Gage

Fig. 10
Plain Sight
Illuminator

Fig. 31
Guard

Fig. 15
DCP weighted
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Fig. 5

Standard vertical bronze water gage, 350 pound

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Equipment, Supplies & Methods (Cont'd)

Flexible Seamless Aluminum Tubing

K-16 A new size, 2" I.D. flexible seamless aluminum tubing, has been produced by **Seamlex Co.**, 41-23 24th St., Long Island City, N. Y. The outside diameter is 2 15/16" and the thickness of metal .022".

Photo shows a unit with open pitch convolutions and integral cylindrical ends; the overall length is 9". Greater lengths can be supplied up to 10 ft. Depending upon internal pressure and operating conditions, this flexible tubing is furnished in open or close pitch helical convolutions, with or without metallic braid jacket. Standard pipe thread fittings of the flare type are applied without solder, braze, or packing. Special end connections upon request.

Seamlex flexible seamless aluminum tubing is now available from ¼" I.D. to 2" I.D. inclusive; smaller or larger sizes can be made to order.

Steam and Water Mixer

K-17 Cold water and steam can be automatically mixed to provide hot water at any desired temperature by a mixing control introduced by the **Powers Regulator Company**, 3434 Oakton St., Skokie, Ill.

Called the Style D Mixer, the control can be used to obtain hot water where only cold water and steam are available, or to superheat plant hot water for a processing application.

Typical hot water applications for the control are in the meat packing, chemical processing, rubber vulcanizing, papermaking, canning, and oil processing fields.

The mixer takes steam and cold water at pressures from 10 to 100 lb. Turning only one handle regulates the temperature of the discharged hot water at any point from that of the incoming water to 200 degrees F., regardless of pressure changes in supply lines.

A pressure equalizing valve, consisting of a floating piston, controls and equalizes the pressure of steam and water before they enter the mixing chamber. The valve compensates for pressure variations in supply lines caused by use of other outlets on the lines.

Check valves built into each inlet prevent interchange of steam and cold water when the mixer is not in use. The temperature adjustment handle also operates an internal delivery shut-off valve.

The mixer is available in ½-in. and ¾-in. sizes. List price is $65 for the ½-in. mixer, $130 for the ¾-in. mixer. Additional information is contained in Bulletin 369.

New 200 hp Boiler

K-18 **Cleaver-Brooks Company**, 326 East Keefe Ave., Milwaukee 12, Wisc., announces that a new 200 hp self-contained unit expands the company's CB line of boilers to include 12 sizes from 15 through 200 hp.

The new boiler, incorporating the latest combustion and safety devices, is offered in series 100, light oil; series 200, No. 2 oil and gas; series 400, No. 6 oil and gas; series 600, No. 6 oil and series 700, straight gas.

Built with design features similar to the 125 hp and 150 hp models, the new CB 200 has full modulating burner, silent oil pump, davited rear and front doors which expedite the tube removal and cleaning.

Quiet operation of the CB 200 is the result of a caseless fan that draws combustion air into a large plenum chamber. The greater area of the plenum chamber deadens noise remarkably.

NATIONAL CARBON COMPANY RELEASES NEW INFORMATION ON BRUSHES FOR SILICONE-INSULATED MOTORS AND GENERATORS

K-19 The increasing use of silicone insulation on direct-current motors and generators has created considerable interest throughout industry. Class H insulation, in extending the temperature limits of the insulation hot-spot from the 130 C of Class B to a maximum of 180 C, brought with it problems totally unrelated to temperatures — problems in connection with the operation of electrical machinery in an enclosed atmosphere of silicone vapors.

Brushes especially processed to meet the operating requirements of silicone-insulated machines were introduced by **National Carbon Company**, a division of Union Carbide and Carbon Corporation, in ample time to go into service as initial equipment last year, and experience has proved their acceptability in this rough service.

According to National Carbon's brush engineers, the operation of ordinary carbon brushes in silicone atmosphere is accompanied by two important phenomena: (1) rapid brush wear, and (2) fluctuating and, at times, very high contact drop. On commutating machines, periodic brush sparking results from unbalanced contact drop and the large amount of carbon dust between the brush and commutator.

The rapid brush wear is caused by the decomposition of the adsorbed silicone vapors on the commutator and brush surfaces, forming abrasive silica. The specially processed "National" brushes, known as Grades N-2 and N-6, not only operate with a minimum of wear, but with more normal contact drop.

The fumes from silicone-insulated windings, it has been found, are produced at a variable rate, depending on the type of varnish used, and the baking temperature and curing cycle. The emission of fumes does not seem to affect adversely the hydrophobic and insulating properties of the silicone varnish.

The rate of emission decreases with time, but under extremely high-temperature operation, increases suddenly and then slowly drops back to the original value. In other words, even after considerable operation of a silicone-insulated machine, the rate of emission of silicone vapors can suddenly increase, without affecting the insulation qualities.

Both brush grades N-2 and N-6 are electrographitic, lampblack grades suitable for practically any type of commutating machine with Class H insulation, except those in the low voltage class requiring metal-graphite brushes. The grades are comparable, except that grade N-2 has a higher commutation factor, that is, a better commutating ability. Grade N-6 is satisfactory in most cases.

Although in some applications there may be a slight sacrifice in brush life when compared with Class B operation, the elimination of rapid dusting greatly reduces the danger of insulation failure caused by collection of carbon in the windings.

National Carbon Company development engineers are continuing their work on brushes for all types of electrical equipment in order to keep this vital adjunct to rotating machinery abreast of the rapid strides made by electrical equipment manufacturers.

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1. Immediate precise close tolerance fit up upon insertion.
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Better Production Ideas and Methods

FOR FREE INFORMATION — Circle code number on page 17 or 18

V-1—Underground Pipe Insulation—4 page brochure discusses the problems of underground pipe insulation and explains how Gilsulate's special properties overcome them. Includes illustrations and brief technical data.—AMERICAN GILSONITE COMPANY, Salt Lake City, Utah.

V-2—Heat-Transfer Unit—Bulletin IP-356 describes how Platecoil units are constructed and how they have been engineered to overcome all types of heat-transfer processing difficulties. Gives 10 advantages which contribute to savings in installation, upkeeps and initial cost. Sketches, photographs, complete specifications and dimensions are included — TRANTER MFG., INC., Platecoil Division, Lansing 4, Mich.

V-3—Spray Lubrication Equipment—Bulletin No. 60-A, 8 pages, provides complete information on spray lubrication systems for open gearing and slide surfaces. Describes manual and automatic systems and component equipment with schematic layouts and gives actual application views.—THE FARVAL CORP., 3249 East 80th St., Cleveland 4, Ohio.

V-4—Vertical Turbine Pumps—Bulletin WO-53 describes the water and oil lubricated vertical turbine pumps, their application, and pump drive heads designed for water wells serving industry, municipality and agriculture.—LAYNE & BOWLER, INC., Memphis 8, Tenn.

V-5—Rotary Pumps—20 page "continuity" catalog defines new internal gear rotary pump line and provides a new concept in pump literature structure and logic. Contains three special tables to facilitate the selection of appropriate pump models for user applications. All data provided in actual performance figures.—THE WAYNE PUMP CO., 214 Tecumseh St., Fort Wayne, Ind.

V-6—Process Control Valves—8 page Catalog 56-C describes a wide range of reducing valves, pump governors, relief valves, temperature regulators, feedwater regulators, float valves, damper regulators and combustion control valves where accurate automatic operation is essential for quality control.—ATLAS VALVE CO., 280 South St., Newark 5, New Jersey.

V-7—Steam Condensers—24 page Catalog illustrates recent additions to Condenser installations in power plants. Includes data on design, maintenance and correction of operation problems for single and multi-pass, divided and non-divided flow, for engines and turbines, power plant and water works condensers.—CONDENSER SERVICE & ENGINEERING CO. INC., Hoboken, New Jersey.

V-8—Coupling Selection Simplified—22" x 17" chart reduces the time for selecting a flexible coupling to a matter of minutes. The main horizontal headings of the chart are three coupling types and sizes with the bore diameter range of all coupling halves.—MORSE CHAIN CO., Industrial Sales Div., Ithaca, New York.

V-9—Chlorine Handling Equipment—Data describes and illustrates equipment used by industry for handling liquid and gaseous chlorine: liquid chlorine evaporators, valves and fittings for chlorine liquid and gas supply lines, manual and pilot operated chlorine pressure reducing valves and chlorine gas metering equipment. — WALLACE & TIERNAN INC., 25 Main St., Belleville 9, N. J.

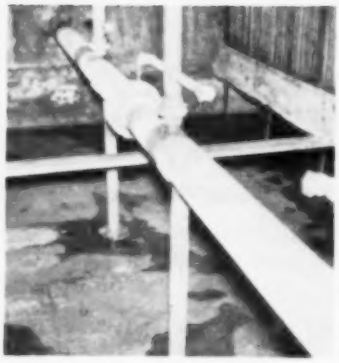
V-10—Non-Destructive Testing—14 page Catalog. "Seeing Isn't Always Believing," has been brought up to date in methods and equip-

CELASTIC and BBX

AS A PERMANENT WATER PROOF LINER FOR AIR WASH TANKS

This badly Leaking Tank was lined with plastic fabric made by a DuPont Subsidiary—

It doesn't leak now and won't leak 10 years from now—



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Marla Spray Penetrating Oil is used to free the worst of corroded bolts, screws, pipe threads, in fact any metal parts stuck together can be freed with MARLA.

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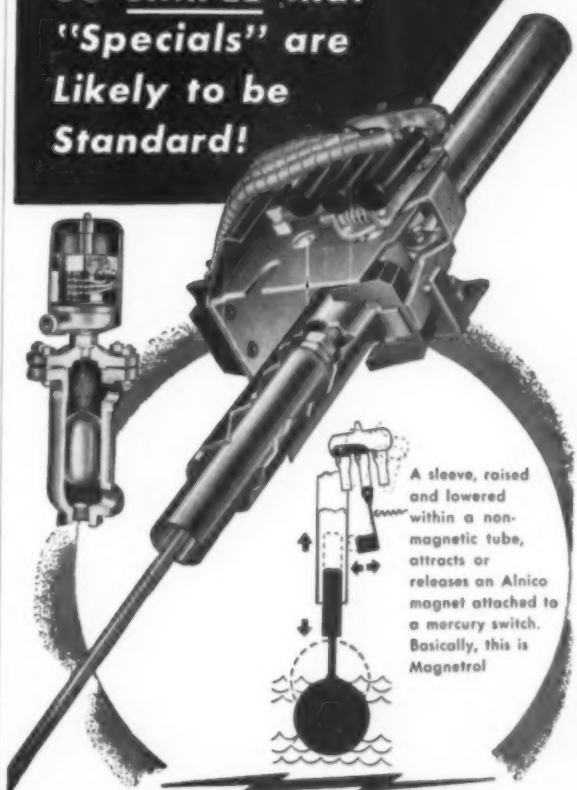
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For more information, use Reply Card—Page 17

Better Production Ideas & Methods (Continued)

ment for non-destructive testing of structural materials for physical defects. Explains positive detection of defects in nonmagnetic metals and in ceramics, ultrasonic measurement of dimensions which cannot be directly measured and materials and processes for indicating dangerous stresses and strains.—MAGNAFLUX CORP., 7300 W. Lawrence Ave., Chicago 31, Ill.

V-11—Pressure Pipe Installation—48 page guide for installing transite pressure pipe for overhead industrial water and process lines contains over 50 illustrations and is divided into 15 sections. Includes hanging and supporting the pipe, bracing for thrusts, the flange coupling and Roto-Split flange coupling, suppliers of fittings, accessories and couplings and diagrams of typical transite systems for overhead lines. —JOHNS-MANVILLE, 22 East 40th St., New York 16, N. Y.

V-12—Diesel Engines—14 page bulletin describes the 251 series of diesel engines in ratings from 550 to 2400 hp, including the 6-cylinder in-line model and the 12- and 16-cylinder Vee-type engines. Dimension charts and specification tables are also included for the three engines.—ALCO PRODUCTS, INC., Schenectady 5, New York.

V-13—Load Center Transformers — Bulletin CS-1000 covers construction features on liquid-filled and dry-type load center transformer units for either indoor or outdoor installation with illustrations and drawings on typical applications. Gives description of standard accessories, ratings available and the types of core and coil assemblies offered. —KUHLMAN ELECTRIC CO., Bay City, Michigan.

V-14—Stationary Batteries—Catalog describes improvements in stationary batteries which are expected to extend service life up to 10% and reduce maintenance requirements. Features a new battery grid alloy and plastic containers, telling how the alloy's high resistance to corrosion and its ability to withstand overcharging increase the efficiency and service life of the batteries.—EXIDE INDUSTRIAL DIVISION of The Electric Storage Battery Co., Box 8109, Philadelphia 1, Pa.

V-15—Cable Support Systems — 12 page Bulletin No. 256-F describes cable trough and accessories for holding cables for all industries. Supports eliminate all field cutting and offer a strong, versatile, and easily assembled system for any change in direction or elevation. Trough is supplied in various widths and lengths to meet requirements in the field. — P-W INDUSTRIES, INC., Duncan & Melrose Sts., Philadelphia 24, Pa.

For More Free Data CIRCLE CODE NO. on the Handy Return Card — Page 17

V-16—Couplings—Catalog No. 62 gives working data on sizes, capacities and dimensions of Series D-100 standard, floating shaft and mill motor type couplings designed to handle angular and offset misalignment up to a total of 12°. — AJAX FLEXIBLES COUPLING CO. INC., Westfield, N. Y.

V-17—Condensation Return Units—Bulletin 4958-B describes new single and duplex condensation return pumping units which performance tables rate up to 10,000 sq ft of radiation with discharge pressures up to 50 lb. Includes construction features and dimensions. — THE DEMING COMPANY, Salem, Ohio.

V-18—Hydraulic Pump-Motor—Catalog G-112 describes the PMB 1.5 hydraulic pump and the MB 1.5 hydraulic motor in plain, base and flange mountings. Includes specification and performance charts for pump and motor.—GEROTOR MAY CORP., Baltimore 3, Md.

V-19—Gear Reducers—4 page Bulletin G-3, describing company's spiral bevel gear reducers — Type VB — for cooling tower fan drives,

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With the opening of the new Morse Chain Co. warehouse at Charlotte, N.C., you can now get better service than ever before on precision-built Morse power-transmission products. We offer you complete stocks . . . prompt service . . . fast deliveries!

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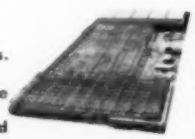

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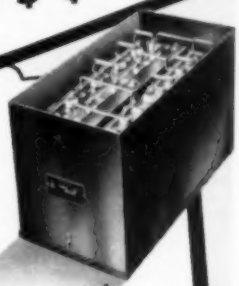
with
SPRAGUE POWER FACTOR CAPACITORS



- CUT POWER BILLS
- AVOID EXTRA EQUIPMENT
- ALLOW BIGGER LOADS
- PROVIDE PLANT FLEXIBILITY

Thousands of installations throughout industry are proving daily that Sprague Power Factor Capacitors installed at each piece of inductive electrical equipment eliminate waste current *right at the source*. Power factor is corrected to the maximum, allowing a greater load at reduced power cost. Need for extra wiring, switchgear, and transformers is often avoided, and plant expansion or moves can be made at minimum cost. *Write for Free 28-page Power Factor Correction Guide.*

SPRAGUE®

Industrial Capacitor Div.
SPRAGUE ELECTRIC CO.
49 MARSHALL STREET
NORTH ADAMS, MASS.

Wilson Tube Cutter

CUTS COSTS!

The Wilson Tube Cutter costs two to eight times less than competitive tools. You also get a tube cutter with eight exclusive features:

(1) It has fewer working parts. (2) It can cut non-ferrous tubes in under four seconds. (3) You can chuck it into your own air or electric drill. (4) It has a replaceable spacer collar to adjust for tube thickness. (5) The cutter bit retracts after withdrawal of the cutter. (6) You have a choice of round or taper shank in smaller sizes. (7) To operate, you insert the cutter in the tube, switch on the power, and press forward. (8) It takes the punishment of constant use.

A Tube Pilot guides tubes through baffles and far sheet when retubing.

B Tube Knockout tool for manual or mechanical use.

It makes good sense to buy the Wilson Tube Cutter and accessories. For some more suggestions that will cut your tube maintenance costs, write for Wilson comprehensive Tube Expander Catalog. For tube cleaners, send for Wilson Catalog 77.

Don't Forget!

For cleaner cleaning WILSON TUBE CLEANERS

For easy, accurate tube rolling WILSON TUBE EXPANDERS

Representatives in all principal cities

Thomas C. Wilson, Inc., 21-11 44th Ave., Long Island City 1, N.Y.

Cable address: "Tubeclean" New York

See our exhibit at the 22nd National Exposition of Power & Mechanical Engineering Coliseum, New York, November 26-30, 1956

Better Production Ideas & Methods (Continued)

offers 13 horsepower rating tables for size selection calculations.—LUFKIN FOUNDRY & MACHINE CO., Lufkin, Texas.

V-20—Butterfly Valve—12 page Bulletin 456 describes a butterfly valve which shuts off completely against low pressure or vacuum, as well as the full line pressure for which it is rated. Original replaceable resilient seat is also the gasket between flanges. — KEYSTONE VALVE CORPORATION, 5325 Kirby Drive, Box 6716, Houston 5, Texas.

V-21—Package Type Boiler—Catalog A3-55 describes the package type Holmar water tube boiler, gas-oil or combination fired, and special units for coal firing; factory or field assembled; suitable for pressures up to 600 psig; 25 to 500 hp; 1,000 to 20,000 lb/hr. — VULCAN STEEL TANK CORPORATION, Box 5292, Tulsa, Oklahoma.

V-22—Steel Tank Maintenance — Pamphlet "Cleaning and Painting All Types of Repair Service" gives requirements for a complete maintenance job at the lowest possible cost for water tanks and other types of steel structures. — STEEL AND TANK SERVICE CO., 118 West 24th St., Charlotte, N. C. or 829 Clayton Ave., Nashville, Tenn.

V-23—Heat Transfer Medium—Bulletin No. 200 describes Thermon which offers low cost, excellent heat transfer, dependability, long service life, use in wide range of temperatures, no jacket pluggages or product contamination, good mechanical and thermal shock resistance, rapid delivery, adaptability, longer life from electric heaters and easy equipment maintenance. — THERMON MANUFACTURING COMPANY, 1017 Rosine Street, Box 1961, Houston, Tex.

V-24—Liquid Separation — Catalog describes Fram Liquid Separator filters space-saver units, scientific method of removing water from liquid hydrocarbons by filtration. Units engineered for easy installation and maintenance and are compactly designed for a wide variety of applications—up to 69 gpm. — WARNER LEWIS COMPANY, Box 3096, Tulsa, Okla.

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By having your Safety-Relief-Gate-Globe-Check Valves rebuilt or serviced by us. Staffed with factory trained personnel we are able to give a new valve guarantee, cut down on time and freight charges. Work performed either in your plant or ours. Complete insurance carried. For particulars write:

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AUTHORIZED REPAIR, MAINTENANCE & SALES AGENCY FOR SAFETY & RELIEF VALVES

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40 Years Dependable Service
Convert your used transformers to cash! Send us a description of them TODAY. *Transformers and Coils built to your specifications.* Send blueprint, for prompt quotation.

TRANSFORMERS BOUGHT, SOLD and REPAIRED

THE ELECTRIC SERVICE CO.
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RENEW YOUR SUBSCRIPTION TO SOUTHERN POWER AND INDUSTRY

HELP FOR EQUIPMENT BUYERS

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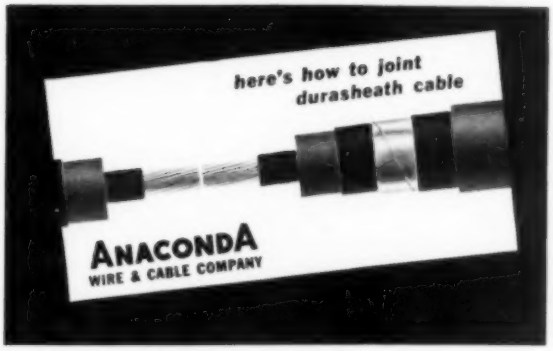
NEW JOINTING BULLETIN

for faster splicing of neoprene-jacketed cable



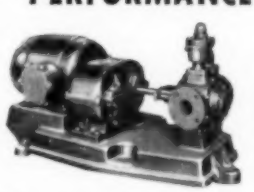
Step-by-step instructions — amply illustrated — pocket-size.

New bulletin simplifies jointing any voltage, any conductor size, shielded or nonshielded neoprene-jacketed cable. Nine illustrations in all, instead of usual single composite drawing. Clear, easy to follow. Fits conveniently in engineer's coat pocket, splicer's hip pocket. No cost or obligation. Write for copies to: Anaconda Wire & Cable Company, 25 Broadway, New York 4, N. Y.

ASK THE MAN FROM **ANACONDA**
FOR **POWER CABLE**

"NEW PUMP" PERFORMANCE

after years of service



with BLACKMER rotary pumps

Here's how you can restore "new pump" efficiency at a fraction of the cost of a new pump, thanks to Blackmer engineering and design.

REPLACEABLE LINER It takes only a matter of minutes to replace the liner of a Blackmer Pump after excessive wear has been caused by the handling of corrosive or abrasive materials.

REPLACEABLE VANES The vanes in Blackmer Rotary Pumps are self-adjusting for wear and give sustained efficiency over years of service. In case of extreme wear or damage, they can be replaced quickly, using only simple hand tools.

Blackmer Rotary Pumps are handling hundreds of liquids and semi-solids successfully.

BLACKMER PUMPS — *liquid materials handling* ®

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TO PURCHASING AGENTS ONLY!

FREE!

Your Choice...
Evans KING SIZE 10-ft. White-Tape
(EXTRA-WIDE BLADE)
or Evans Pocket 12-ft. White-Tape
(REGULAR ½" WIDE BLADE)

Attention Purchasing Agents:
We make this startling offer to introduce your company to Evans' superior King-Size and Pocket White-Tapes, the finest measuring tapes manufactured.

Simply fill in the coupon below and we'll send you, absolutely free and without any obligation, your choice of either our King-Size 10-ft. ($2.39 retail) or Pocket 12-ft. White-Tape ($1.89 retail)! (Offer limited to one tape per purchasing agent.)

We feel that once you try Evans Tapes, you'll never buy another brand. Here's why:

EVANS KING-SIZE

10-ft. ¾" Wide Steel Tape Stands Up Straight for Easy One-Man Measurements.

The 33⅓% wider blade (full ¾") stays straight up—will not bend when making measurements. Chrome plated zinc die-cast case. Free belt clip for handy carrying and Free Tenite Utility Case. Self-adjusting sliding hook for accurate inside-outside measuring.

Also available in 6, 8, 12-ft. lengths.

All EVANS Tapes are marked so your men don't have to figure!

Work in feet and inches? Read Here
Work in inches? Read Here

EVANS 12-ft. Pocket WHITE-TAPE

Measures a full 12 feet — eliminates adding two measurements as with shorter tapes. Regular ½" wide blade. Chrome plated zinc die-cast case. Self-adjusting sliding hook for 100% accurate inside or outside measurements. Free transparent Tenite Utility Case.

Also available in 6, 8, and 10-ft. lengths.

All Evans tapes available with custom nameplates for gifts to your customers carrying your advertising message.

Evans RULE CO., Department 181
400 Trumbull Street, Elizabeth, N. J.

Please send me free sample of (check one)
☐ King-Size 10-ft. Steel Tape ☐ Pocket 12-ft. White-Tape
My two sources of supply for steel tapes are:
1_____
2_____
Name_____ Title_____
Company_____
Address_____
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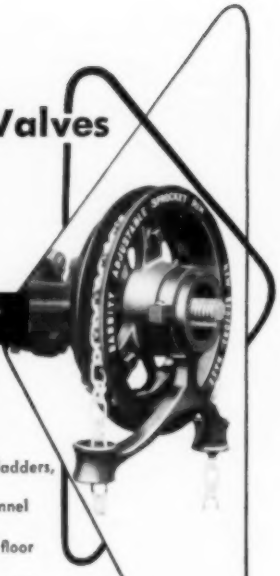

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